PHILIPS VKR6840

MODEL

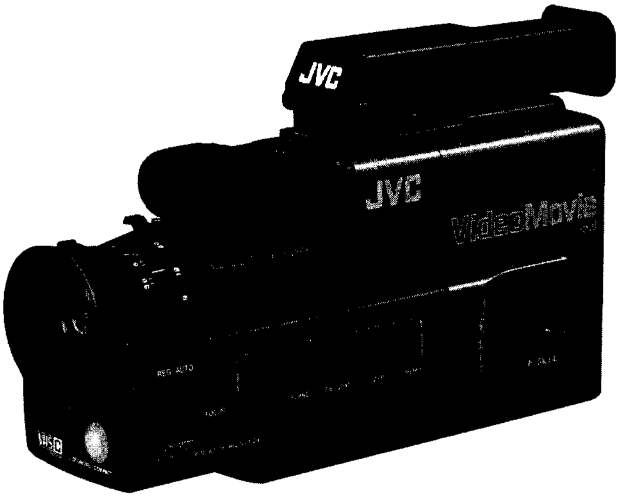
SERVICE MANUAL

JVC

SERVICE MANUAL

VHS VIDEO MOVIE VHS C SECAM

GR-45S



HQ
High Quality

CARACTERISTIQUES TECHNIQUES

Format : Standard VHS
Alimentation : CC 9,6 V ⎓
Consommation : 8,5 W
Système de signal : SECAM
Système d'enregistrement: Luminance: enregistrement FM
Couleur: enregistrement direct à division par 4 de la sous-porteuse
Conforme au standard VHS
Cassette : Cassette VHS-C
Vitesse de bande (VN) : 23,39 mm/s
(LD) : 11,70 mm/s
Durée maximale d'enregistrement
(VN) : 30 mn (avec cassette EC-30)
(LD) : 60 mn (avec cassette EC-30)

Vidéo
Niveau de sortie : –6 dBs, 1 kohm (via le connecteur SORTIE A/V)
Entrée de microphone : –68 dBs, haute impédance, asymétrique
Capteur : CCD de 1/2"
Eclairage minimal requis : 10 lux (à F/1,4)
Gamme d'éclairage : 10 – 100.000 lux
Objectif : F/1,4 – 2,0, f = 9 – 54 mm, zoom électrique 6:1 à deux vitesses avec commande de diaphragme automatique et position macro, diamètre du filtre 49 mm
Viseur : Electronique avec tube à rayons cathodiques noir et blanc de 0,6"
Obturateur à grande vitesse sélectionnable : 1/1000 s
Commutation de la température de couleur : commutable (3.200 K/4.500 K/5.500 K)
Réglage de la balance des blancs : Automatique/standard préréglé
Température de fonctionnement : 0°C à 40°C
Humidité de fonctionnement : 35 à 80%
Température de stockage : –20°C à 50°C
Poids : 1,2 kg (avec le viseur)
Dimensions : 110(L) x 149(H) x 243(P) mm (avec le viseur)

AA-V5S CARACTERISTIQUES TECHNIQUES
Alimentation : CA 110 – 240 V∿, 50/60 Hz
Consommation : 21 watts
Sortie : CC 14 V ⎓ 1,1 A (charge)
CC 9,6 V ⎓ 1,2 A (VideoMovie)
Système de charge : Courant constant, détection de crête, par minuterie
Dimensions : 68(L) x 38(H) x 150(P) mm
Poids : Environ 380 g

C-P5U CARACTERISTIQUES TECHNIQUES
Type : Adaptateur de cassette VHS
Dimensions : 188(L) x 25(H) x 104(P) mm
Poids : 235 g
Accessoire : Pile "R6" x 1

Accessoires fournis:
Adaptateur secteur/chargeur de batterie AA-V5S
Adaptateur de cassette C-P5U
Cassette vidéo EC-30
Batterie BN-V6GU
Coffret de transport CB-V55U
Câble de cope AV VC-V896E
Bandoulière
Viseur électronique
Capuchon d'objectif
Bonnette d'objectif
Pile pour le fonctionnement de l'horloge

Les caractéristiques techniques sont pour le mode VN à moins d'indication contraire.
Présentation et caractéristiques modifiables sans préavis.

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No. 86027

NOTE: For a technical description, please refer to Technical Guide VTG86006 GR-45 SECAM.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: **Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

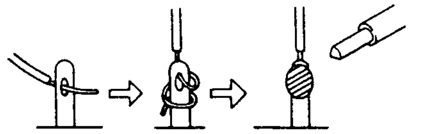


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

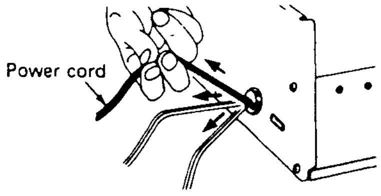


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

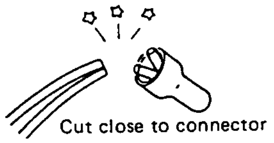


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

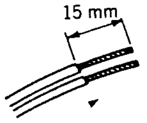


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

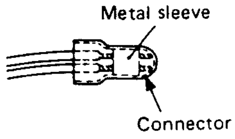


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

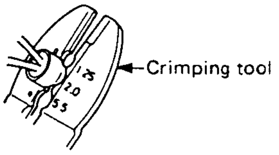


Fig. 6

(5) Check the four points noted in Fig. 7.

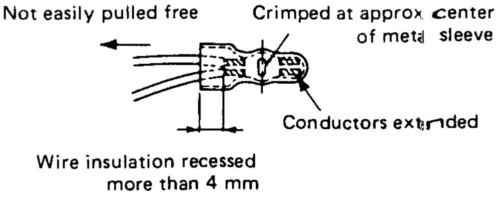

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

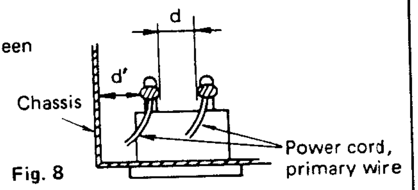


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

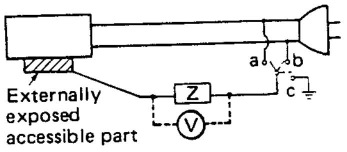


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

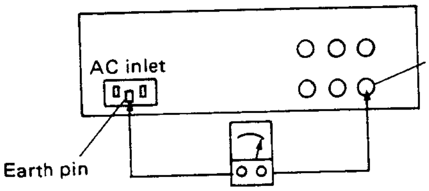


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

MANUEL D'INSTRUCTIONS

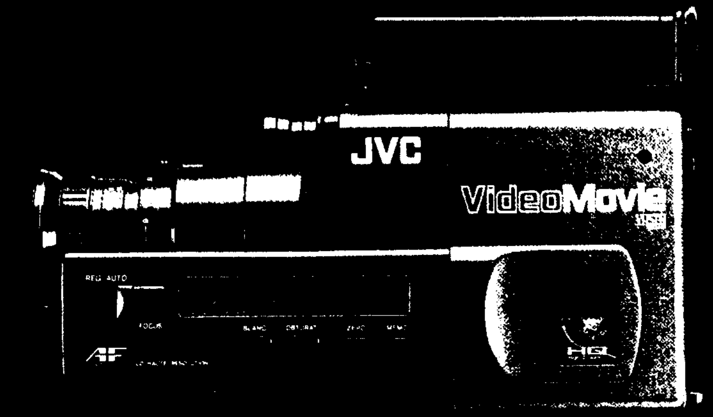
VideoMovie

VHS C SECAM

HQ High Quality

GR-45

Spécial pour le GR-45S/AA-V5S



CCD
Charge Coupled Device

AF
AUTO FOCUS

JVC

POUR VOTRE SECURITE

AVERTISSEMENT:

POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LA PLUIE.

Cet appareil ne doit être utilisé que sur courant continu 9,6 V ⎓.
ATTENTION:
Afin d'éviter tout risque d'incendie ou d'électrocution, NE PAS utiliser d'autres sources d'alimentation électrique.

L'adaptateur secteur/chargeur AA-V5S ne doit être utilisé que sur tension CA 110 – 240 V∿, 50/60 Hz seulement.
Attention:
Afin d'éviter tout risque d'incendie ou d'électrocution, NE PAS utiliser d'autres sources d'alimentation électrique.

Si vous constatez une détérioration de la bande de votre cassette vidéo lors de son utilisation, vous devez immédiatement retourner votre appareil et la cassette endommagée à votre revendeur JVC afin qu'il détermine la nature de l'incident dont l'origine peut provenir soit d'une cassette défectueuse ou détériorée, soit d'un dérèglement du VideoMovie.

VHS C SECAM   HQ High Quality

- Le VideoMovie a été spécialement conçu pour les cassettes vidéo VHS C. Seules les cassettes portant la marque "VHS C" peuvent être utilisées avec cet appareil.
- Le VHS HQ est compatible avec le matériel VHS existant.

Avertissement sur la pile au lithium
La pile utilisée dans cet appareil peut présenter des risques d'incendie ou de brûlure chimique si elle est mal traitée. Ne pas recharger, démonter, chauffer à plus de 100°C ni mettre au feu.
Changer la pile avec une "Matsushita Electric CR2025", l'utilisation d'une autre pile peut présenter un risque d'incendie ou d'explosion.
- Jeter immédiatement les piles usées.
- Placer hors de la portée des enfants.
- Ne pas démonter ni jeter au feu.

ATTENTION:
Pour éviter tout risque d'électrocution, ne pas ouvrir le boîtier. Aucune pièce intérieure n'est à régler par l'utilisateur. Se référer à un agent qualifié en cas de problème.

REMARQUE:
- La plaque d'identification (numéro de série) et l'étiquette d'avertissement de sécurité se trouvent sous l'appareil.
- La plaque d'identification (numéro de série) du viseur est située sous le viseur.
- La plaque d'identification (numéro de série) de l'adaptateur secteur/chargeur est située sous l'appareil.

Le viseur fourni est le VF-V45S. Ne pas utiliser d'autre viseur avec le GR-45S.

Cet appareil a été fabriqué pour être conforme à la directive 82/499/CEE (82/499/EEC).

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PRECAUTIONS A OBSERVER

Pour votre sécurité, observer strictement les instructions suivantes.

- Ne pas ouvrir le coffret.
- Ne pas laisser pénétrer de liquides inflammables, de l'eau ou des objets métalliques dans l'appareil.
- Ne pas l'utiliser quand il y a de l'orage. Débrancher le cordon d'alimentation de l'appareil raccordé.

Eviter d'utiliser l'appareil dans les conditions suivantes:

- Endroits sujets à de l'humidité ou de la poussière excessives.
- Près d'appareils générateurs de champs magnétique ou électrique puissants (haut-parleurs, antennes de diffusion, etc.).
- Endroits sujets à la suie ou de la vapeur, par exemple près d'un appareil de cuisson.
- Endroits soumis à des chocs ou vibrations excessifs.
- Près d'un téléviseur (des images roulantes ou des hurlements risquent de se produire).
- Endroits très chauds.

Ne pas exposer l'appareil à des températures de plus de 50°C pendant longtemps.

Si l'appareil est laissé à la lumière directe du soleil, dans une automobile fermée ou près d'un radiateur, le CCD et le détecteur de mise au point risquent d'être endommagés et le coffret déformé. De plus, cela risque de provoquer de mauvais fonctionnements des transistors et autres pièces électroniques et mécaniques. A retenir:

- Ne pas laisser l'appareil dans des endroits où il fait plus de 50°C.
- Ne pas l'utiliser dans des endroits où il fait plus de 40°C.
- Ne pas l'utiliser dans des endroits où il fait moins de 0°C.
- Protéger l'appareil contre des conditions trop sèches ou trop humides (au-dessous de 35 % ou au-dessus de 80 % d'humidité).
- Pour un entreposage prolongé, choisir un endroit où la température est entre -10°C et 30°C.

Faire spécialement attention pour la protection de l'appareil.

- Ne pas laisser mouiller l'appareil.
- Ne pas le laisser dans une voiture fermée par un jour d'été chaud.
- Faire spécialement attention de ne pas laisser tomber l'appareil et à ne pas le cogner contre des objets durs. Le protéger des chocs lors du transport.

Prendre l'habitude de respecter les instructions suivantes.

- Ne pas retirer la batterie ou déconnecter les appareils d'alimentation pendant l'enregistrement ou la lecture avant d'avoir presser la touche ALIMENT. sur l'arrêt, sinon la bande peut être endommagée.
- Quand vous n'utilisez pas l'appareil, retirer la batterie.

Toujours garder l'objectif et l'oeilleton du viseur propres.

- Quand l'objectif est sale ou poussiéreux, éliminer la saleté avec une brosse souple ou avec un papier de nettoyage d'objectif.
- De la moisissure risque de se produire sur l'objectif s'il est laissé sale.

Attention de ne pas abimer le CCD

- Ne pas laisser l'objectif dirigé vers des objets extrêmement lumineux comme le soleil ou d'autres sources de lumière pendant longtemps. Bien que le CCD soit moins susceptible d'être brûlé qu'un tube, une attention doit être exercée en utilisant cet appareil. Le plus important étant de garder l'objectif couvert en dehors des prises de vues.
- Ne pas diriger l'oeilleton du viseur vers le soleil.

La mise au point automatique demande quelques soins.

- Ne pas toucher à la bague de mise au point quand le dispositif de mise au point automatique fonctionne car cela risque de l'abimer.
- Pour mettre un filtre ou un objectif à effets spéciaux, couper l'alimentation ou passer du mode de mise au point automatique en mode manuel. NE JAMAIS essayer de mettre un filtre ou un objectif lorsque la mise au point automatique est en marche car cela produira un mauvais fonctionnement. (Si un objectif de conversion téléobjectif ou grand angle est en place, la mise au point automatique ne peut pas être utilisée.)

Manipuler l'appareil avec soin.

- Protéger le microphone des chocs excessifs.
- Ne pas transporter l'appareil en le tenant uniquement par le viseur.

La condensation d'humidité empêche le fonctionnement de l'appareil.

- Vous avez sans doute observé qu'en versant un liquide froid dans un verre, des gouttes d'eau vont se former à l'extérieur du verre. Le même phénomène se produit sur le tambour de têtes d'un magnétoscope quand il est déplacé d'un endroit froid vers un endroit chaud, après avoir chauffé une pièce qui était froide, sous des conditions d'humidité extrême ou dans un endroit où l'air est refroidi par un climatiseur.
- De l'humidité sur le tambour de têtes peut endommager sérieusement la bande vidéo et provoquer des dommages internes au magnétoscope lui-même.
- Si de l'humidité se condense sur le tambour de têtes, un avertissement de condensation apparaît dans l'affichage du compteur et l'appareil entre en mode d'arrêt et ne fonctionne pas. Dans ce cas, attendre quelques heures jusqu'à ce que l'indicateur disparaisse.

Entretien

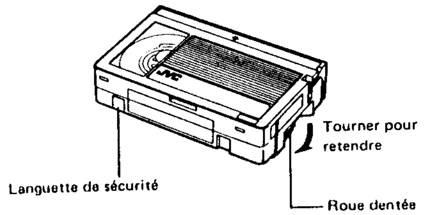
- Si le coffret est poussiéreux, le nettoyer en l'essuyant doucement avec un chiffon doux.
- Eviter l'usage de produits de nettoyage puissants tels que la benzine ou l'alcool car ils risquent d'endommager le coffret.
- Le nettoyage ne doit être effectué qu'après avoir retiré la batterie ou qu'après avoir débranché les autres sources d'alimentation.

Mauvais fonctionnement sérieux

En cas de mauvais fonctionnement, arrêter d'utiliser l'appareil immédiatement et consulter votre centre de service JVC local.

CASSETTES VIDEO

- Le GR-45S n'utilise que des cassettes vidéo compactes portant le label VHS C.
- L'enregistrement sur des cassettes préenregistrées efface automatiquement les signaux vidéo et audio enregistrés précédemment.
- Une cassette inversée ne peut pas être introduite.
- Ne pas mettre en place et retirer la cassette plusieurs fois de suite sans faire défiler la bande car celle-ci risque de se détendre et elle sera endommagée.
- S'assurer que la bande n'est pas détendue avant de mettre la cassette en place. Si elle l'est, tourner la roue dentée sur la cassette dans la direction de la flèche pour la retendre.
- La cassette est munie d'une languette de sécurité pour éviter un effacement accidentel. Quand la languette est retirée, l'enregistrement est impossible. Si vous voulez enregistrer sur une cassette dont la languette a été brisée, utiliser de l'adhésif pour boucher l'orifice.
- Pour éviter que la bande ne soit exposée à la poussière et aux traces de doigts, ne pas ouvrir le couvercle de l'avant.



Entreposage des cassettes

- Eviter de les exposer aux rayons directs du soleil. Les garder éloignées des radiateurs.
- Eviter de les entreposer dans des endroits humides ou poussiéreux.
- Ne pas laisser tomber les cassettes. Ne pas les exposer à des vibrations ou chocs violents.
- Ne pas les exposer à des champs magnétiques puissants (près d'un moteur, d'un transformateur ou d'un aimant).
- Placer les cassettes dans leurs boîtes et les ranger verticalement.

CARACTERISTIQUES

- Permet la lecture directe sans appareil supplémentaire.
- Ultra compact et ultra léger: seulement 1,2 kg.
- Obturateur électronique à 2 vitesses pour la lecture claire et nette des prises de vues d'action: 1/50 et 1/1000 de seconde.
- Capteur CCD (Système à transfert de charges) haute résolution à mémoire de trame de 1/2" nouvellement développé pour des images d'une résolution de 300 lignes.
- Fonctionnement entièrement automatique en une seule touche de la mise au point, de l'exposition et de la balance des blancs.
- Zoom électrique puissant à deux vitesses 6:1 avec fonction macro.
- Système HQ (Haute Qualité) pour une image de qualité supérieure.
- Durée maximale d'enregistrement de 60 minutes sur une bande en mode LD.
- Système à 8 têtes double azimut pour des enregistrements et lectures de qualité dans les deux modes VN et LD.
- Modèle à haute sensibilité/faible retard: permet la prise de vues sous un éclairage aussi faible que 10 lux.
- Mise au point par analyse de l'image.
- Alignement automatique de la balance des blancs avec trois positions préréglées.
- Touche de compensation de contre-jour.
- Fondu audio/vidéo lié au déclencheur marche/arrêt.
- Grand affichage à cristaux liquides facile à lire.
- Viseur électronique réglable ultra compact (tube à rayons cathodiques monochrome, écran de 0,6 pouce (15,2 mm)) avec commande de dioptrie, également pour la lecture immédiate sur place.
- Fonction sélectionnable d'enregistrement automatique de la date.
- Affichage de la date/heure enregistrable.
- Compteur de durée d'enregistrement écoulée.
- Seconde touche de déclenchement d'enregistrement prévue sur le dessus de GR-45S.
- Système de montage par assemblage pour des transitions douces entre les séquences.
- Commutateur de mode de copie prévu pour de meilleurs résultats en copie.
- Fonction de contrôle rapide sélectionnable.
- Système d'attente d'enregistrement en une touche.
- Système de commande de montage: permet de commander à la fois le GR-45S et un magnétoscope précisé raccordé en utilisant les commandes du GR-45S, et le montage à préenroulement pour des montages sans trou ni bruit de transition.
- Recherche accélérée dans les deux sens.
- Batterie poignée unique servant à la fois de poignée pour gagner du poids et de la place.
- Présentation ergonomique avec poignée et repose-doigt pour la commande de déclenchement.
- Alarme de déclenchement informant l'opérateur avec un son électronique quand le déclencheur de marche/arrêt est utilisé.
- Trois manières d'alimenter: batterie, adaptateur secteur et batterie automobile.

Le GR-45S est conçu pour être utilisé avec les signaux de télévision couleur de type SECAM. Il ne peut pas être utilisé pour la lecture sur un téléviseur de standard différent. Cependant, l'enregistrement en direct et la lecture sur le viseur sont possibles n'importe où. Utiliser les batteries BN-V5GU/BN-V6GU/BN-V7GU et, pour les recharger l'adaptateur secteur/chargeur de batterie multi-tensions fourni. (Un adaptateur de conversion adéquat risque d'être nécessaire pour le branchement sur les prises secteur de forme différente selon les pays.)

ALIMENTATION

Les 3 possibilités d'alimentation vous donnent le choix du système approprié à vos besoins.

ATTENTION

- Aucune fonction n'est possible sans alimentation.
- Ne pas utiliser d'autre source d'alimentation que celles spécifiées.
- Ne jamais essayer d'utiliser les sources d'alimentation avec d'autres appareils que le VideoMovie.

Quand le secteur n'est pas disponible

Utiliser les batteries:

- BN-V5GU (ordinaire)
- BN-V6GU (haute capacité)
- BN-V7GU (très haute capacité)

Remarque:

Les batteries sont maintenues déchargées pour le transport. Par conséquent, avant de les utiliser s'assurer de les recharger. Voir en page 23.

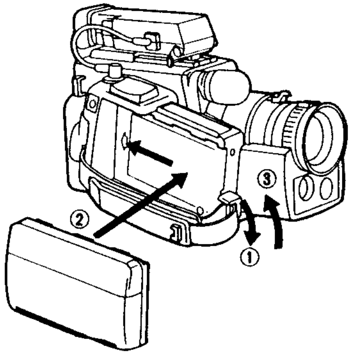
Fixation de la batterie

① Tirer vers le bas le levier de libération de la batterie.

② Aligner la batterie sur le profil de la monture de batterie, et coulisser la batterie dans la direction de la flèche pour la mettre en place.

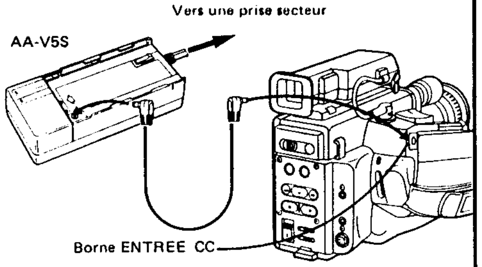
③ Relever le levier de libération de la batterie, jusqu'à son verrouillage en place.

Pour retirer la batterie rabaisser le levier de libération de la batterie et coulisser la batterie vers l'extérieur.



Sur courant alternatif

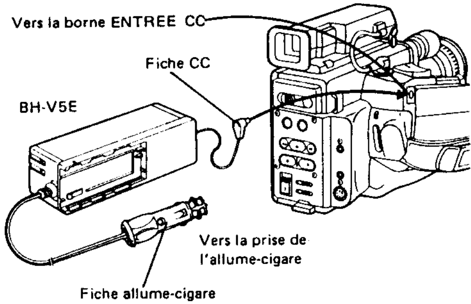
Utiliser l'adaptateur secteur/chargeur de batterie AA-V5S fourni.

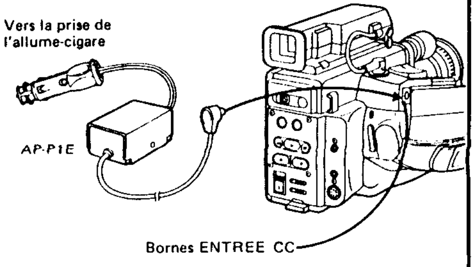


Dans une automobile

Utiliser l'adaptateur pour batterie automobile AP-P1E ou le chargeur de batterie alimenté par batterie automobile BH-V5E.

- Laisser le moteur de la voiture au ralenti lors de l'utilisation de la batterie automobile. (Pour l'utilisation avec les voitures reliées négativement à la masse 12 V uniquement.)

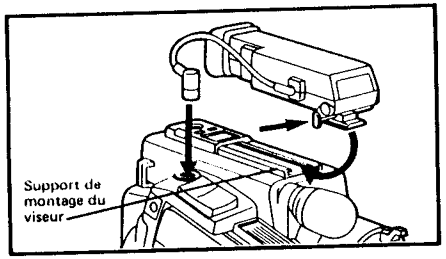




PREPARATIFS DE BASE

Couper l'alimentation avant de monter ou de retirer le viseur.

Montage du viseur

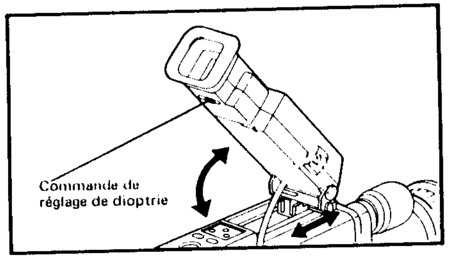

Support de montage du viseur

1 Aligner la fixation de couplage du viseur le long du support de montage sur le corps et glisser la fixation dans le support tout en appuyant sur le bouton.

2 Raccorder le câble du viseur au connecteur de câble du viseur (VISEUR).

Démontage du viseur:
Retirer le câble du viseur et glisser le viseur à l'extérieur du support tout en appuyant sur le bouton.

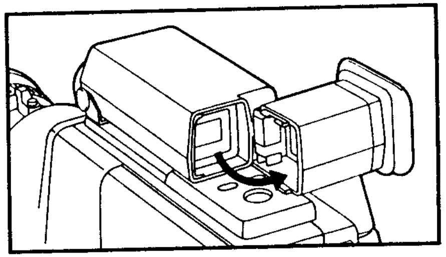
Réglage du viseur


Commande de réglage de dioptrie

La lentille du viseur peut être réglée pour s'adapter à la vue de l'utilisateur en faisant glisser la commande de réglage de dioptrie. Sa position normale est complètement à gauche, vers le compartiment à cassette.

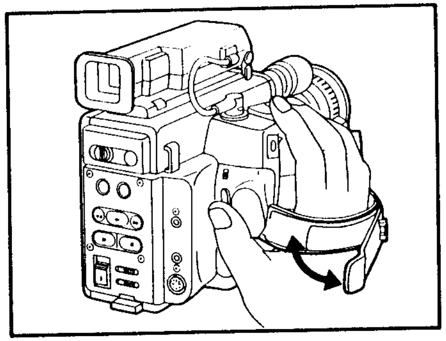
Le viseur peut être positionné pour un plus grand confort de visionnement. Il peut être glissé vers l'avant ou l'arrière et peut être incliné jusqu'à 90°.

Ouverture de l'oeilleton



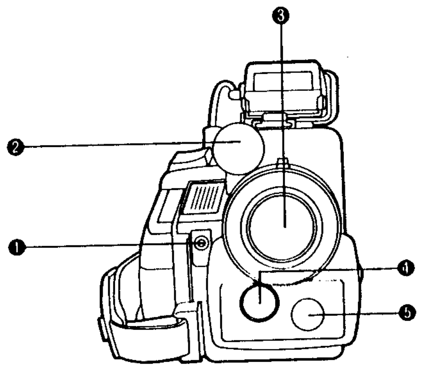
L'oeilleton du viseur peut être ouvert pour le nettoyage ou une meilleure visibilité en lecture.

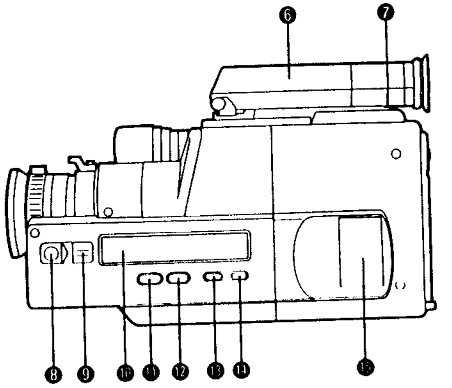
Réglage de la courroie de poignée



1 Séparer la bande Velcro pour agrandir la boucle.

2 Passer votre main droite dans la boucle et saisir la poignée d'objectif. Régler la longueur de la courroie pour l'adapter à la taille de la main et réattacher la bande Velcro.

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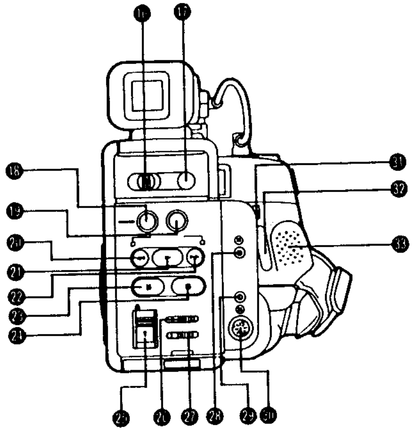
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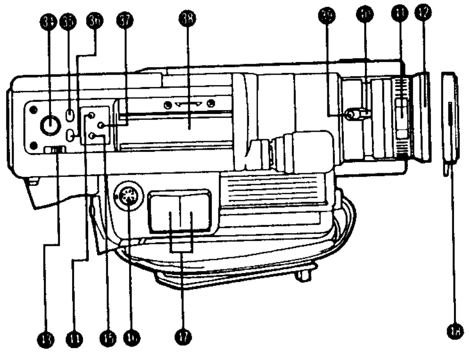
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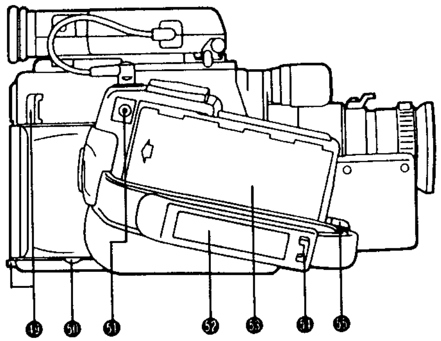
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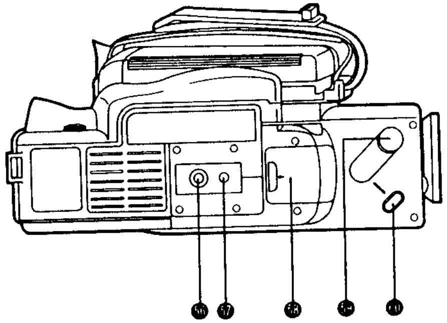
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COMMANDES ET CONNECTEURS

Se reporter aux schémas de la planche de référence.

❶ **Prise de microphone externe (MIC.) (page 27)**

❷ **Microphone exclusif**

❸ **Objectif zoom 6:1**

❹ **Fenêtre du détecteur de mise au point**
Permet à la lumière d'entrer pour mesurer la distance entre la caméra et le sujet.

❺ **Fenêtre du détecteur de la balance des blancs**
Permet à la lumière d'entrer pour le réglage de la balance des blancs.

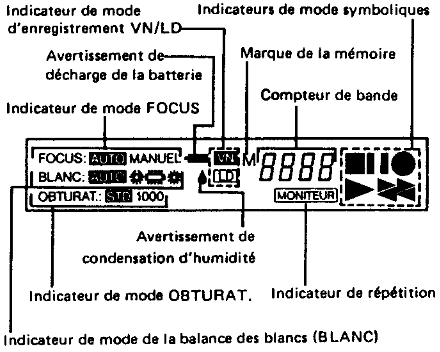
❻ **Viseur électronique**
Pour le contrôle de la scène filmée ou de l'image de lecture après l'enregistrement.

❼ **Bouton de réglage de dioptrie (page 6)**

❽ **Touche tout-automatique (REG. AUTO)**
Appuyer sur cette touche place la mise au point et la balance des blancs sous contrôle automatique et sélectionne la vitesse d'obturateur standard.

❾ **Touche de sélection de mise au point (FOCUS)**
Commuter sur AUTO pour la mise au point automatique, et commuter sur MANUEL pour la mise au point manuelle.

● **Affichage à cristaux liquides (LCD)**


Indicateur de mode d'enregistrement VN/LD
Indicateurs de mode symboliques
Avertissement de décharge de la batterie
Marque de la mémoire
Compteur de bande
Indicateur de mode FOCUS
FOCUS: AUTO MANUEL
BLANC: AUTO
OBTURAT.: STD 1000
VN
LD
M
8888
MONITEUR
Avertissement de condensation d'humidité
Indicateur de mode OBTURAT.
Indicateur de répétition
Indicateur de mode de la balance des blancs (BLANC)

Indicateur de mode symbolique

ARRET: ■	PAUSE ENREGISTREMENT: ❚❚●	RECHERCHE ARRIERE: ▶◀◀
LECTURE: ▶	CONTROLE RAPIDE: ❚❚● Clignotant	RECHERCHE ACCELEREE: ▶▶▶
PAUSE: (ARRET SUR IMAGE) ❚❚	RETOUR RAPIDE: ◀◀	COMMANDE DE MONTAGE: ▶ Clignotant
ENREGISTREMENT: ●	AVANCE RAPIDE: ▶▶	AVERTISSEMENT DE FIN DE BANDE: ● Clignotant

● **Touche de sélection de la balance des blancs (BLANC) (page 9)**
La balance des blancs est sélectionnable manuellement en utilisant cette touche.

✱ : Eclairage halogène ou tungstène.
▭ : Eclairage fluorescent.
✹ : Lumière du jour.

● ***Touche de sélection de l'obturateur* (OBTURAT.) (page 19)**

● **Touche de remise à zéro du compteur (ZERO) (page 14)**

● **Touche de mémoire de compteur (MEMO.) (page 14)**

● **Porte cassette**
Introduire une cassette vidéo VHS-C pour l'enregistrement ou la lecture.

● **Interrupteur d'alimentation (ALIMENT.) (page 9)**
Faire glisser pour établir l'alimentation. L'indicateur d'arrêt apparaît sur l'affichage LCD. Faire glisser à nouveau pour couper l'alimentation.

● **Touche d'attente d'enregistrement (ENR.)**
Appuyer pour engager le mode d'attente d'enregistrement. Pour commencer l'enregistrement, appuyer sur la touche de marche/arrêt d'enregistrement ● .

● **Touche moniteur (MONITEUR) (page 11)**

● **Touche de contrôle rapide/montage (CONTROLE ENR./MONT.) (page 10)**

● **Touche de réembobinage/recherche (RET. RAP/RECH. ACCEL.)**
Une pression sur cette touche dans le mode d'arrêt réembobine la bande; une pression en mode de lecture permet la lecture rapide dans le sens inverse.

● **Touche de lecture (LECTURE)**
Appuyer pour commencer la lecture.

● **Touche d'avance rapide/recherche (AV. RAP/RECH. ACCEL.**
Une pression sur cette touche dans le mode d'arrêt fait avancer rapidement la bande; une pression en mode de lecture permet la lecture rapide.

● **Touche de pause (PAUSE)**
Appuyer pour visionner une image fixe pendant la lecture ou faire une pause en lecture.

● **Touche d'arrêt (ARRET.)**
Appuyer pour passer en mode d'arrêt.

● **Commutateur d'éjection (EJECT.)**
Pour ouvrir le porte cassette.

● **Sélecteur du mode d'enregistrement VN/LD**
Placer sur VN pour enregistrer à vitesse normale. Placer sur LD pour enregistrer à vitesse plus grande, permettant une durée d'enregistrement d'une heure avec une seule cassette.

● **Commutateur de copie (COPIE A./M.)**
Normalement le régler sur A. Pour une meilleure qualité d'image en copie, le placer sur la position M.

● **Prise de télécommande (TELEC.)**
Pour le raccordement du boîtier de télécommande de pause RM-P1U en option.

● **Prise d'écouteur (ECOUT.)**

● **Connecteur de sortie audio/vidéo (SORTIE A/V)**
Les signaux audio et vidéo peuvent être sortis par ce connecteur.

● **Commutateur marche/arrêt d'alarme (BIP DECL. A./M.)**
Commuter sur M. pour engager le système d'alarme de déclenchement. Commuter sur A. si vous ne voulez pas utiliser ce système. Si le commutateur BIP DECL. A./M. est placé sur M., une alarme électronique sonne quand la touche de marche/arrêt d'enregistrement est pressée pour commencer l'enregistrement. L'alarme électronique sonne deux fois quand la touche de marche/arrêt d'enregistrement est pressée pour la pause d'enregistrement. Cette alarme aide pour éviter des erreurs d'enregistrement.

● **Touche de marche/arrêt d'enregistrement**
Appuyer sur cette touche en mode d'attente d'enregistrement pour commencer l'enregistrement. Une seconde pression fait repasser en mode d'attente d'enregistrement.

● **Repose doigt**
Placer le pouce sur cette zone rainurée près de la touche de marche/arrêt d'enregistrement entre les opérations de marche/arrêt.

● **Seconde touche de marche/arrêt d'enregistrement (DECLENCHEMENT)**

● **Touche d'enregistrement de date/heure AFF. DUREE ENR. M./A.)**
Appuyer sur cette touche quand vous ne voulez pas enregistrer la date/heure. Ceci enlèvera les indications de date/heure du viseur. Appuyer à nouveau pour enregistrer la date/heure. La date/heure réapparaîtra dans le viseur.

● **Touche de remise à zéro de la durée écoulée (DUREE ENR. ZERO)**
Appuyer sur cette touche pour remettre à zéro la durée d'enregistrement écoulée.

● **Touche de sélection d'affichage (SELECT AFF.)**
Appuyer sur cette touche pour sélectionner l'affichage de la date/heure et le mode d'enregistrement. Les modes bouclent dans l'ordre suivant:

→ **Réserve d'enregistrement automatique de la date** → **Affichage de la date** → **Affichage de la date/heure** → **Affichage de l'heure** —

La fonction d'enregistrement automatique de la date affiche et enregistre la date pendant 5 secondes en mettant l'alimentation et en commençant l'enregistrement. Avant que l'enregistrement commence, ce mode est indiqué dans le viseur par l'indication de réserve d'enregistrement automatique de la date "–.–.–".

● **Monture du viseur (page 6)**
Fixer le viseur fourni.

● **Touche macro**
Tourner la bague du zoom tout en appuyant sur cette touche pour la prise de vues macro.

● **Levier de zoom manuel**

● **Bague de mise au point manuelle**

● **Tête d'objectif**

● **Commutateur de durée d'enregistrement (AFF. DUREE ENR. M./A.)**
Si ce commutateur est sur M., le viseur affiche la durée d'enregistrement écoulée. Commuter sur A. pour annuler l'affichage. Le retrait de la cassette remet l'affichage à "00.00" Cette commandité ne fonctionne qu'en prises de vues avec la caméra.

● **Touche de sélection (DATE HEURE SELECT.) (page 16)**
Utiliser pour selectionner la partie des réglages de l'heure ou de la date à changer. Bouclage entre les réglages de l'année, du mois, du jour, de l'heure et des minutes. Pour terminer le réglage, appuyer une fois après sélection de la zone des minutes.

● **Touche de réglage (DATE HEURE REGLAGE) (page 16)**
Utiliser pour régler la fonction horloge et date incorporée.

● **Connecteur de câble du viseur**
Raccorder le câble du viseur.

● **Touches du zoom électrique**

● **Capuchon d'objectif**
Recouvrir l'objectif quand vous n'utilisez pas l'appareil.

● **Oeillets pour la bandoulière**

● **Commande d'alignement (ALIGNEMENT) (page 13)**
Minimise les barres de bruit, si observées, pendant la lecture.

● **Borne d'entrée CC (ENTREE CC)**
Pour le raccordement à l'adaptateur secteur/chargeur de batterie fourni, au chargeur de batterie à partir de la voiture en option ou à l'adaptateur pour batterie automobile pour l'alimentation CC. (page 5)

● **Courroie de poignée (page 6)**

● **Monture de la batterie poignée (page 23)**

● **Agrafe pour le capuchon d'objectif**
Pour éviter le balancement du capuchon d'objectif pendant les prises de vues.

● **Levier de libération de la batterie (page 5)**

● **Prise de montage sur trépied (page 27)**

● **Orifice du taquet**

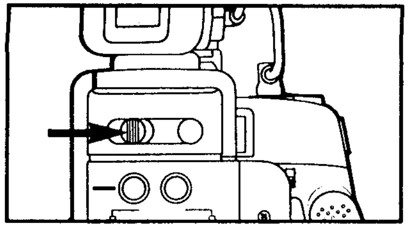
● **Compartiment de la pile de l'horloge (PILE MEMOIRE) (page 16)**
Contient la pile au lithium qui alimente la fonction date et heure.

● **Touche de compensation de contre-jour (C.-J) (page 19)**
La commande de diaphragme est toujours automatique. Pour la compensation de contre-jour, appuyer sur cette touche. En étant pressée, le diaphragme est plus ouvert de 1 – 2 f que réglé automatiquement.

● **Touche de fondu (FONDU) (page 15)**
Pour fondre en fermeture l'image en un écran noir, appuyer sur cette touche, puis sur la touche de marche/arrêt d'enregistrement pour commencer le fondu. Pour l'ouverture en fondu à partir d'un écran noir, appuyer sur cette touche, puis appuyer sur la touche de marche/arrêt d'enregistrement pour commencer l'ouverture en fondu.

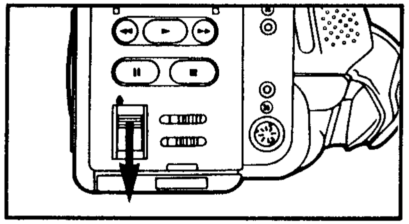
ENREGISTREMENT

1



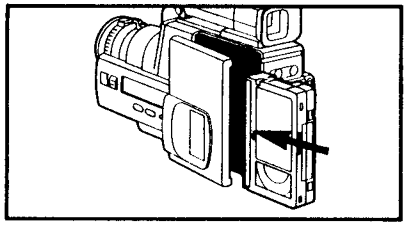
Mettre l'interrupteur ALIMENT. sur M.

2



Ouvrir le porte cassette en appuyant sur le commutateur EJECT..

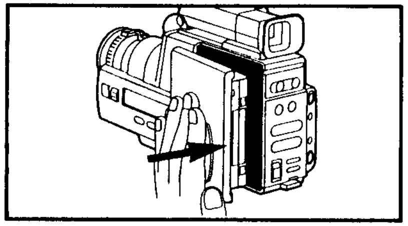
3



Introduire la cassette avec sa flèche imprimée vers l'extérieur.

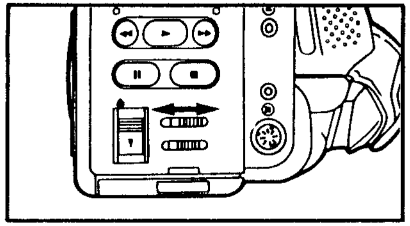
Eliminer d'abord le relâchement de la bande, puis introduire correctement la cassette. Voir page 3.

4



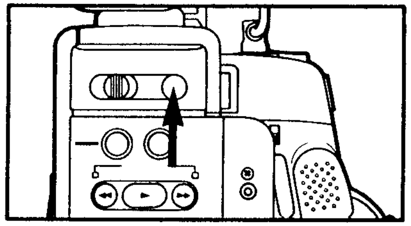
Fermer le porte cassette en appuyant sur sa partie centrale.

5



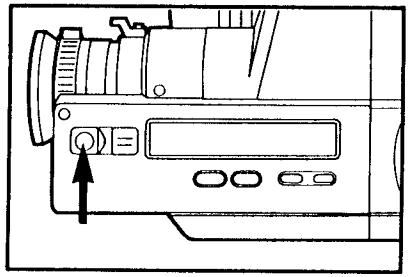
Régler la vitesse de la bande sur VN ou LD.
VN: 30 minutes
LD: 60 minutes

6



Appuyer sur la touche d'attente ENR. L'appareil passe dans le mode d'attente d'enregistrement.

7

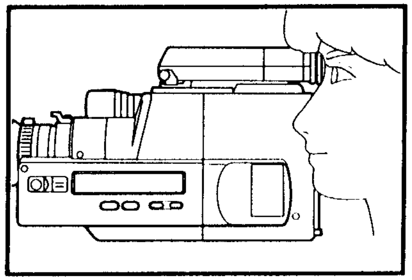


Pour un fonctionnement entièrement automatique, appuyer sur la touche REG. AUTO.

Pour un fonctionnement manuel, utiliser les touches BLANC et FOCUS.

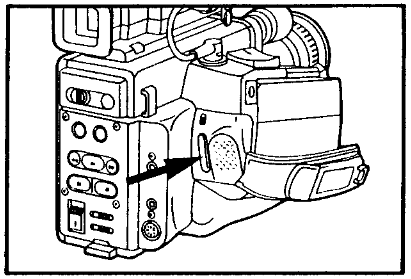
- Appuyer sur la touche BLANC pour que le symbole requis apparaisse dans le viseur et sur l'affichage LCD.
  - ✱ : si le sujet est éclairé par une lampe halogène ou tungstène.
  - ▭: si le sujet est éclairé par une lampe fluorescente.
  - ☀ : pour une prise de vues en extérieur à la lumière du jour.
- En prenant sous un éclairage fluorescent, pour de meilleurs résultats, toujours utiliser le réglage de l'éclairage fluorescent dans le mode de balance des blancs manuel.
- Pour la mise au point manuelle, appuyer sur la touche FOCUS pour que MANUEL soit indiqué sur l'affichage LCD. Un indicateur d'aide à la mise au point va apparaître dans le viseur.

8



Déterminer la mise au point et la composition en se référant à l'image du viseur. Pour le zooming, voir en page 18.
Pour l'enregistrement de la date/heure, voir en page 16.

9



Appuyer sur la touche de marche/arrêt.

- ENR ou LD ENR apparaît dans l'écran du viseur, montrant que l'enregistrement est en cours.
- Bien faire attention de ne pas toucher par inadvertance à toute touche pendant la prise de vues.

10 Pour arrêter momentanément l'enregistrement, appuyer à nouveau sur la touche de marche/arrêt.

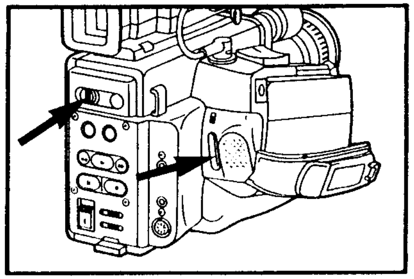
Fonction de contrôle rapide

- Si vous voulez revoir la fin du dernier enregistrement pour confirmation, appuyer sur la touche CONTROLE ENR./MONT. à partir du mode d'attente d'enregistrement; la bande sera réembobinée d'environ 2 secondes de programme et lue automatiquement pour cette séquence, après laquelle elle s'arrêtera en mode d'attente d'enregistrement pour la prochaine prise de vues.

Remarques:

- La commande ALIGNEMENT doit être placée sur sa position centrale.
- Une distorsion peut se produire quand la lecture commence. C'est normal.

11



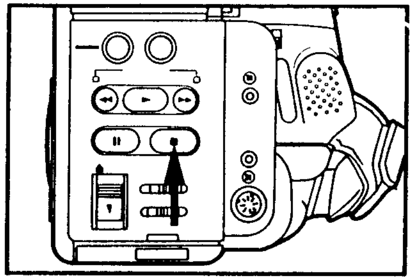
Pour reprendre l'enregistrement, appuyer sur la touche de marche/arrêt.

- Pour une longue pause, appuyer sur l'interrupteur ALIMENT. pour couper l'alimentation et économiser l'energie de la batterie.
- Si le mode d'attente d'enregistrement dure plus longtemps que 5 minutes, l'alimentation se coupe automatiquement. Pour reprendre l'enregistrement, remettre l'alimentation et appuyer sur la touche marche/arrêt. Ceci permet de faire des enregistrements assemblés proprement même après une longue pause.

Enregistrements assemblés

- La répétition des étapes 9 et 11 produit des enregistrements assemblés.
- Si l'enregistrement est repris à partir du mode d'arrêt, quelques images de l'enregistrement précédent sont remplacées par le nouvel enregistrement. Pour éviter ceci, suivre la technique décrite dans "Technique d'enregistrement par assemblage 2" en page 42.

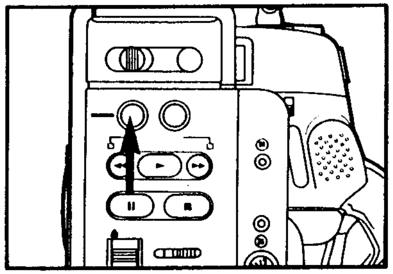
12



Pour terminer l'enregistrement, appuyer sur la touche ARRET.

- Après s'être assuré que la bande s'est arrêtée, appuyer sur l'interrupteur ALIMENT. pour couper l'alimentation.

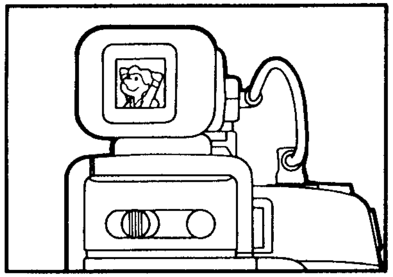
Répétition



Si vous souhaitez répéter les angles de prise de vues, composer des scènes, etc. sans enregistrement réel sur la bande, appuyer sur la touche MONITEUR à la place de ENR. La scène visée apparaîtra sur l'écran du viseur. Pour une répétition entièrement automatique, appuyer également sur la touche REG. AUTO. Pour engager le mode d'attente d'enregistrement à partir de la répétition, appuyer sur la touche ENR. Pour libérer le mode de répétition, appuyer sur la touche ARRET.

- La répétition est possible avec ou sans cassette chargée.
- Avec une cassette chargée, la répétition n'est pas possible pendant le réembobinage ou l'avance rapide.
- Le circuit d'économie d'énergie ne fonctionne pas pendant la répétition. (Pour la fonction d'économie d'énergie, voir en page 12.)

Contrôle dans le viseur



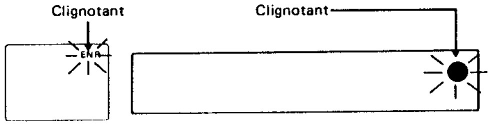
- Réembobiner la bande jusqu'au point que vous voulez vérifier.
- Appuyer sur la touche LECTURE, et vous pourrez voir l'image de lecture sur l'écran du viseur.

Remarque:

- Une pression sur la touche PAUSE pendant la lecture arrête l'image sur l'écran du viseur.
- La recherche accélérée est également possible dans les deux sens.

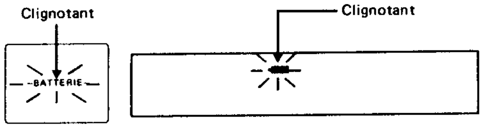
Avertissements

Avertissement de fin de bande



- L'indicateur d'enregistrement clignote sur l'écran du viseur et sur l'affichage LCD quelques minutes avant la fin de la bande.
- Quand la fin de la bande est atteinte pendant l'enregistrement, le mode d'arrêt est automatiquement engagé.

Avertissement de décharge de la batterie

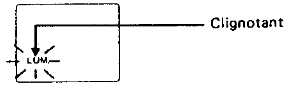


Viseur

Affichage à cristaux liquides

- Quand la charge de la batterie est presque épuisée, une indication apparaît à la fois dans le viseur et sur l'affichage LCD. Remplacer la batterie par une autre qui est chargée.
- Après l'apparition de ces indicateurs, l'alimentation se coupe automatiquement. Dans cet état, toutefois, une pression sur le commutateur EJECT. donne l'alimentation et éjecte la cassette.

Avertissement de faible éclairage



- Si l'indicateur "LUM." clignotant apparaît sur l'écran du viseur, la quantité de lumière est insuffisante. Augmenter l'éclairage.

CIRCUIT D'ECONOMIE D'ENERGIE ET DE PROTECTION DE LA BANDE

- Pour économiser l'énergie de la batterie, le VideoMovie (en fonctionnement sur batterie) coupe automatiquement son alimentation dans les conditions suivantes:
  - (1) Si laissé pendant plus de 5 minutes dans le mode d'arrêt.
  - (2) Si laissé pendant plus de 5 minutes dans le mode d'attente d'enregistrement (Pause-enregistrement).
- Pour protéger la bande, le VideoMovie (en fonctionnement sur batterie ou sur secteur) libère légèrement la tension de la bande et l'alimentation est automatiquement coupée s'il est laissé pendant plus de 5 minutes dans le mode d'attente d'enregistrement (Pause-enregistrement).
- Pour la même raison, le VideoMovie passe en mode d'arrêt et l'alimentation est coupée automatiquement s'il est laissé pendant plus de 5 minutes en mode d'arrêt sur image (Pause-lecture).

Fonctionnement sur batterie

ARRET → ALIMENTATION COUPEE

5 minutes

Fonctionnement sur batterie/secteur

PAUSE-ENREGISTREMENT → ALIMENTATION COUPEE

5 minutes

PAUSE-LECTURE → ARRET → ALIMENTATION COUPEE

5 minutes

TECHNIQUE D'ENREGISTREMENT PAR ASSEMBLAGE — 1 (pour remplacer la batterie pendant l'enregistrement)

1 Si l'avertissement de décharge de la batterie apparaît dans le viseur ou sur l'affichage LCD pendant l'enregistrement, appuyer sur l'interrupteur ALIMENT. pour couper l'alimentation et non sur la touche ARRET.

2 Remplacer la batterie par une autre qui est chargée.

3 Appuyer sur l'interrupteur ALIMENT. pour remettre l'alimentation.
- L'appareil sera en mode d'attente d'enregistrement.

4 Appuyer sur la touche de marche/arrêt d'enregistrement pour commencer à enregistrer.

TECHNIQUE D'ENREGISTREMENT PAR ASSEMBLAGE — 2 (pour enregistrer sur une bande partiellement enregistrée)

1 Lire la bande jusqu'à l'endroit où vous voulez commencer un nouvel enregistrement.
- Utiliser la touche RECH. ACCEL. pour une localisation plus rapide.

2 Appuyer sur la touche PAUSE au point localisé.
- L'appareil passera en mode d'arrêt sur image.

3 Appuyer sur la touche ENR.
- L'appareil passera en mode d'attente d'enregistrement.

4 Appuyer sur la touche marche/arrêt d'enregistrement pour commencer à enregistrer.

Remarque:
Quelques déformations de l'image peuvent se produire au point de transition. Ce n'est pas dû à un défaut de l'appareil.

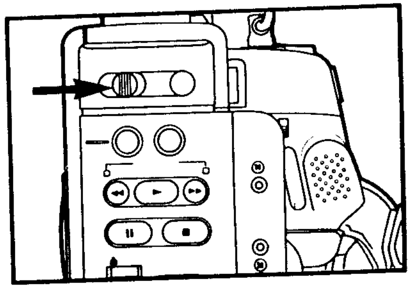
LECTURE

Le GR-45S permet la lecture des cassettes VHS-C enregistrées.
Pour les raccordements, se reporter aux pages 19 et 20.

Préparatifs
- Placer le sélecteur d'antenne du convertisseur HF RF-V3S sur VIDEO et le sélecteur de canal du téléviseur sur votre canal vidéo (canal AV spécifié).

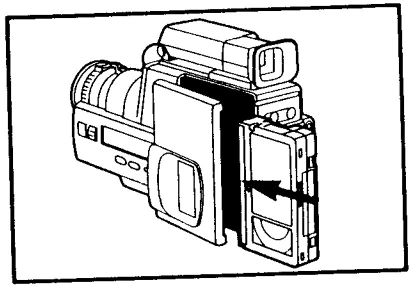
Raccorder un appareil d'alimentation. (Batterie ou adaptateur secteur: voir page 5.)

1



Mettre l'interrupteur ALIMENT. sur M.

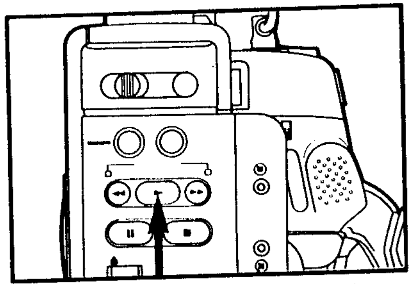
2



Introduire une cassette préenregistrée.

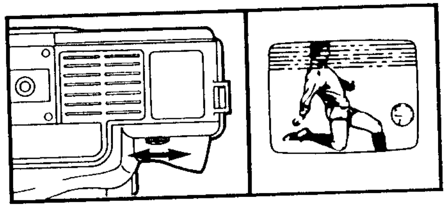
D'abord enlever le relâchement de la bande, puis introduire la cassette correctement. Voir page 3.

3



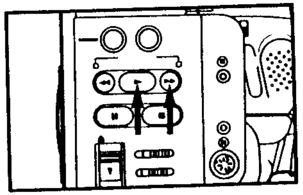
Appuyer sur la touche LECTURE. La lecture commencera.
- Le commutateur VN/LD peut être dans n'importe quelle position. Le mode d'enregistrement VN ou LD est automatiquement détecté et la lecture est faite à la bonne vitesse.
- Quand la fin de la bande est atteinte pendant la lecture, le mode de réembobinage est automatiquement engagé.

Réglage de l'alignement
Si des barres de bruit apparaissent sur l'écran, régler la commande ALIGNEMENT. La tourner lentement dans un sens ou dans l'autre pour minimiser ces barres. Après lecture d'une bande qui avait besoin de ce réglage, remettre la commande ALIGNEMENT dans la position centrale.



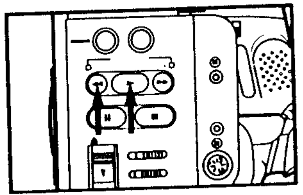
Recherche accélérée

Lecture rapide dans le sens avant



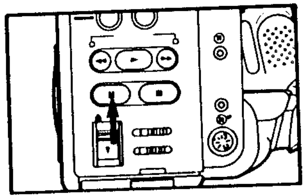
Appuyer sur la touche AV.RAP. dans le mode de lecture. La lecture sera accélérée à 3 fois la vitesse normale en mode VN, 7 fois la vitesse normale en mode LD, tant que la touche est pressée.

Lecture rapide dans le sens inverse



Appuyer sur la touche RET. RAP. dans le mode de lecture. La lecture sera accélérée à 3 fois la vitesse normale en mode VD, 7 fois la vitesse normale en mode LD, tant que la touche est pressée.

Arrêt sur image



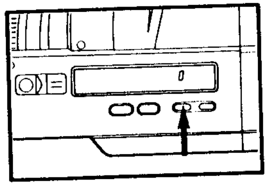
Appuyer sur la touche PAUSE pendant la lecture. L'image s'arrêtera sur l'écran.
- Après environ 5 minutes d'arrêt sur image, l'appareil passe automatiquement en mode d'arrêt pour protéger la bande et l'alimentation est coupée.

Remarque
- Du bruit peut apparaître sur l'écran pendant la recherche accélérée et l'arrêt sur image. Ceci n'est pas dû à un défaut de l'appareil.

Fonction de mémoire de compteur

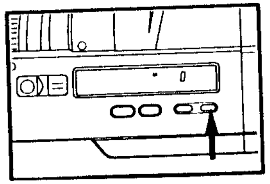
Le GR-45S comporte un dispositif de mémoire de compteur qui facilite la localisation d'une séquence particulière sur la bande.

1



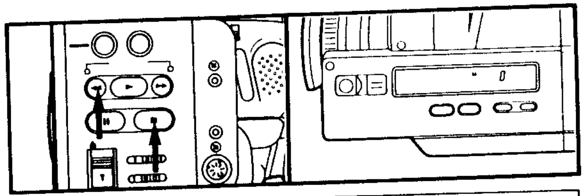
Appuyer sur la touche ZERO pour remettre le compteur à "0".

2



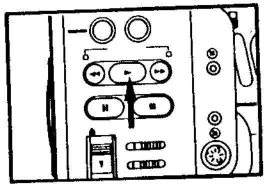
Appuyer sur la touche MEMO. La marque "M" apparaîtra.

3



Après l'enregistrement ou la lecture, appuyer sur la touche ARRET., puis sur la touche RET. RAP. La bande s'arrêtera automatiquement au passage par "0" du compteur.

4



Appuyer sur la touche LECTURE pour commencer la lecture.

Remarques:
- La fonction de mémoire de compteur est également effective dans le mode d'avance rapide.
- Pour annuler la fonction de mémoire, appuyer sur la touche MEMO.
- Quand l'appareil d'alimentation est débranché, toutes les indications sur l'affichage LCD disparaissent et la fonction de mémoire de compteur est annulée.

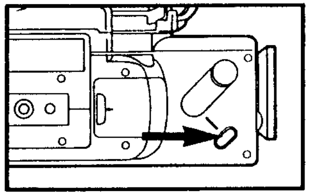
TECHNIQUES SPECIALES

Fondus à l'ouverture et à la fermeture

Le GR-45S comporte un dispositif de fondus automatiques qui permet de faire des fondus à l'ouverture et à la fermeture en douceur sur un fond noir. L'audio est également fondu en synchro avec la vidéo.

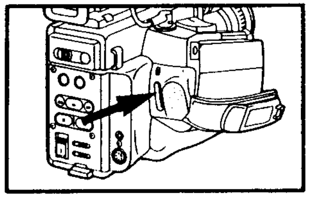
Fondu automatique à l'ouverture

1



Déterminer la composition dans le mode d'attente d'enregistrement et appuyer sur la touche FONDU pour réserver le mode d'ouverture en fondu.

2

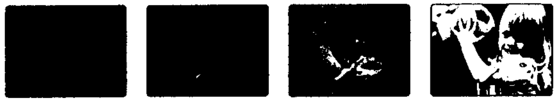


FONDU

FONDU est affiché dans le viseur quand le fondu est réservé, et continue à être affiché jusqu'à la fin du fondu à l'ouverture ou à la fermeture.

Appuyer sur la touche de marche/arrêt. L'écran deviendra rapidement noir et l'enregistrement commence. Quand la touche marche/arrêt est relâchée, le fondu à l'ouverture commencera. Il sera terminé au bout d'environ 5 secondes. Si la touche de marche/arrêt n'est pas relâchée en étant pressée, l'image noire restera sur l'écran et sera enregistrée.

Fondu à l'ouverture →

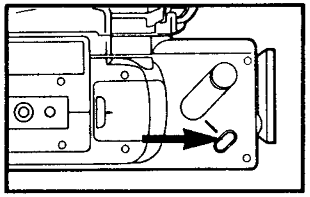


← Fondu à la fermeture

Fondu automatique à la fermeture

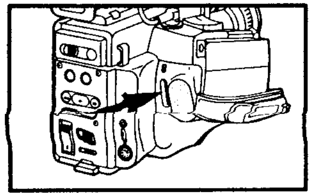
1 Commencer la prise de vues comme d'habitude.

2



Appuyer sur la touche FONDU pour réserver le mode de fondu à la fermeture.

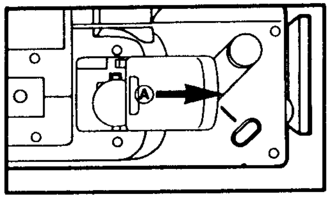
3

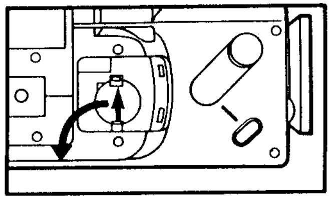


Appuyer sur la touche de marche/arrêt. Le fondu à la fermeture commencera et sera terminé au bout d'environ 5 secondes. Fini, le mode d'attente d'enregistrement est entré. Si la touche de marche/arrêt n'est pas relâchée étant pressée, l'image finale noire reste sur l'écran et continue à être enregistrée, jusqu'au relâchement de la touche.

Avertissement sur la pile au lithium
- **Jeter immédiatement les piles usées.**
- **Placer hors de la portée des enfants.**
- **Ne pas démonter ni jeter du feu.**

Enregistrement de la date/heure





Introduction de la pile

Cette pile alimente la fonction date/heure.

1. Faire coulisser le couvercle pour ouvrir le compartiment de la pile de l'horloge sur le dessous du VideoMovie en appuyant légèrement sur la partie marquée Ⓐ dans le schéma.
2. Introduire la pile au lithium fourni **avec le pole (+) en haut.**
3. Glisser le couvercle pour fermer jusqu'au verrouillage.

Remarques:

- Couper l'alimentation de l'appareil avant d'introduire la pile.
- Quand la pile est introduite, l'horloge commence à fonctionner.

Remplacement de la pile

La pile dure environ un an. Quand l'avertissement de pile au lithium (▶ E) apparaît dans le viseur, cette pile a besoin d'être remplacée. Se procurer une nouvelle pile au lithium CR2025 et suivre les instructions suivantes.

1. Retirer la pile en appuyant sur le bouton dans la direction de la flèche.
2. Introduire la nouvelle CR2025, **avec le pole (+) en haut.**
3. Glisser le couvercle pour fermer jusqu'au verrouillage.

Remarque:

Couper l'alimentation de l'appareil avant de retirer la pile usée.

Remplacer la pile seulement par une "Matsushita CR2025". L'utilisation d'une autre pile peut présenter des risques d'incendie ou d'explosion.

Réglage de la date/heure

Avant de régler la date et l'heure pour la premiere fois ou après remplacement de la pile, 1.1.87 clignote dans le viseur, indiquant que l'horloge a besoin d'être réglée.

①Mettre l'alimentation de l'appareil, 1.1.87 clignotera dans le viseur. Appuyer sur la touche MONITEUR pour passer en mode de répétition.

②Appuyer sur la touche DATE HEURE SELECT. – l'année clignote.

③Appuyer sur DATE HEURE REGLAGE pour choisir la bonne valeur.

④Appuyer sur DATE HEURE SELECT. pour sélectionner l'item suivant à changer, avec l'item sélectionné, avec l'item sélectionné changeant dans l'ordre suivant:

→ Année → Mois → jour → Heures → Minutes → Réglage final

⑤Refaire les étapes ②et ③pour régler tous les items. Après le réglage des minutes, appuyer sur la touche DATE HEURE SELECT., et les items vont cesser de clignoter. Pour le mode d'enregistrement automatique de la date, l'indicateur de réserve d'enregistrement automatique de la date va apparaître.

Enregistrement de la date/heure

La date, l'heure, ou la date et l'heure peuvent être affichées et enregistrées en fonction du mode sélectionné. Appuyer sur la touche SELECT AFF. pour boucler entre les modes dans l'ordre suivant:

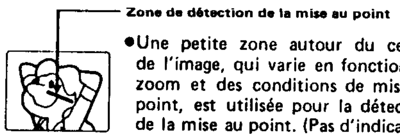
→ Réserve d'enregistrement automatique de la date → Affichage de la date → Affichage de la date/heure → Affichage de l'heure

- Si la fonction d'enregistrement automatique de la date est sélectionnée, "–.–.–" apparaît dans le viseur jusqu'au commencement de l'enregistrement. Aussi longtemps que cette fonction est choisie, la date sera automatiquement affichée et enregistrée pendant environ 5 secondes suivant la première opération de la touche de marche/arrêt d'enregistrement après la mise de l'alimentation.
- L'indication de réserve d'enregistrement automatique de la date cessera d'être affichée environ 5 secondes après que la date est enregistrée si la touche AFF DUREE ENR. M./A. est placée sur A. sauf si l'alimentation est remise à nouveau.

Indications d'enregistrement de la date/heure

Enregistrement automatique de la date		Affichage de la date	Affichage de la date et de l'heure	Affichage de l'heure
- - - Enregistrement automatique de la date en réserve	31.12.87 Enregistrement automatique de la date exécutée	31.12.87	31.12.87 14:30	14:30

Mise au point automatique

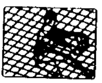
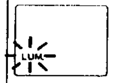
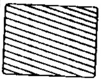
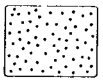


- Une petite zone autour du centre de l'image, qui varie en fonction du zoom et des conditions de mise au point, est utilisée pour la détection de la mise au point. (Pas d'indication réelle sur l'écran.)

ATTENTION

- Ne pas toucher à la bague de mise au point alors que le mécanisme de mise au point automatique est en fonctionnement.
- Faire attention de ne pas recouvrir la fenêtre de détection de la mise au point automatique, sinon la mise au point précise n'est pas possible.
- En dehors de l'utilisation, ne pas laisser le Video-Movie en mode de mise au point automatique avec l'alimentation mise; sinon la lumière entrant dans la fenêtre du détecteur de mise au point automatique fera fonctionner le système auto-focus en consommant de l'énergie.

La mise au point correcte peut ne pas être obtenue dans les situations suivantes. Dans de tels cas, la mise au point manuelle devra être effectuée pour obtenir une mise au point correcte.

	Deux sujets à des distances différentes qui se recoupent dans la même scène.		Faible éclairage qui fait apparaître l'indicateur de sous-exposition sur l'écran du viseur.
	Des lignes uniquement inclinées.		Fond d'objets minuscules ou identiques qui sont répétés avec régularité.

Remarque:

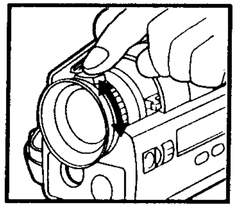
- Si l'objectif et/ou la fenêtre du détecteur de mise au point sont souillés par des taches ou voilés avec de la condensation, une mise au point précise n'est pas possible. Les maintenir propres. S'ils deviennent sales, les essuyer avec un morceau de tissu doux. Si la condensation se produit, les sécher en essuyant avec un tissu doux ou attendre les conditions dans lesquelles ils deviennent secs.

Une heure d'enregistrement

- Pour enregistrer plus longtemps sur une seule cassette, utiliser le mode LD (longue durée).
- Pour l'enregistrement LD, une batterie de plus grande capacité doit être utilisée.
- Pour des prises de vues sans souci, il est recommandé de préparer des batteries pour 3 ou 4 fois la durée nécessaire pour l'enregistrement voulu.

Mise au point manuelle

Si le mode de mise au point manuelle est choisi, procéder comme suit:



① Placer le zoom en mode téléobjectif en appuyant sur la touche "T".
② Effectuer la mise au point en tournant la bague de mise au point.
③ Déterminer la composition en appuyant sur la touche "W".

Attention:
Recouvrir le détecteur de la balance des blancs en faisant la mise au point manuelle donnera une mauvaise reproduction des couleurs.

Remarque:

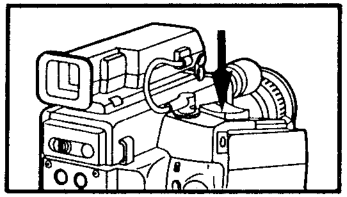
- En mode manuel, effectuer la mise au point en position téléobjectif maximale. Si vous faites la mise au point sur un certain objet dans la position grand angle, des images à mise au point nette ne peuvent pas être obtenues lors du zooming avant parce que la profondeur de champ est réduite à des longueurs focales plus longues.

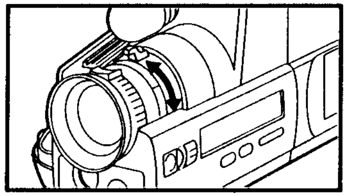
INDICATEURS DE MISE AU POINT
Les indicateurs de mise au point sur l'écran du viseur fonctionnent en mode manuel.

Condition	Indication	Corrections à effectuer
Mise au point derrière le sujet	▶	Tourner la bague de mise au point dans le sens des aiguilles d'une montre jusqu'à ce que le carré du centre apparaisse.
Mise au point correcte	■	Laisser la bague de mise au point comme elle est.
Mise au point devant le sujet	◀	Tourner la bague de mise au point dans le sens inverse des aiguilles d'une montre jusqu'à ce que le carré du centre apparaisse.
Indication impossible à cause d'un faible contraste	– ▶ ■ ◀ –	Estimer la distance du sujet et régler la bague de mise au point en se réferrant à son échelle des distances.

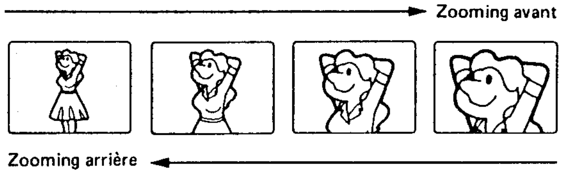
Zooming

Quand la longueur focale de l'objectif est modifiée en tournant la bague du zoom, l'image semble venir plus près ou plus loin du viseur.





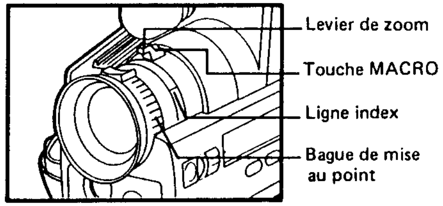
Zooming électrique
Appuyer sur la touche "T" pour un zooming avant et sur la touche "W" pour un zooming arrière. Deux vitesses de zooming sont disponibles. Pour un zooming lent, appuyer légèrement. Pour un zooming à vitesse normale, appuyer fermement.



Zooming manuel
Faire tourner le levier du zoom vers le bas pour un zooming avant et vers le haut pour un zooming arrière.

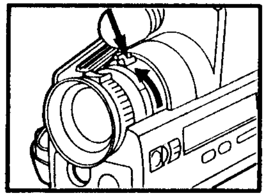
Prises de vue macro

Normalement, la mise au point n'est possible que pour des sujets éloignés de plus de 1,1 m de la caméra. En plaçant l'objectif dans le mode macro, il est possible de faire la mise au point manuelle sur des objets situés à moins de cette limite, et même juste devant l'objectif. Les positions MACRO et ZOOM combinées permettent des prises de vue de zéro à l'infini.



Engager la position MACRO

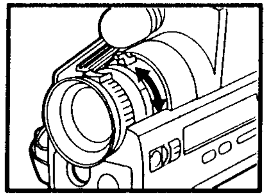
1



Tout en appuyant sur la touche de macro, tourner le levier du zoom dans la direction de la flèche jusqu'à ce que le chiffre "9" sur la bague du zoom dépasse la ligne index.

Mise au point

2

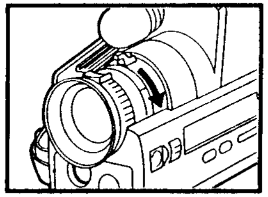


Effectuer la mise au point en tournant doucement la bague du zoom.

- Utiliser le levier du zoom pour la mise au point dans la gamme MACRO.
- Tourner la bague de mise au point modifiera légèrement l'angle de vue de l'objectif.
- La mise au point automatique ne fonctionne pas en prise de vues macro.

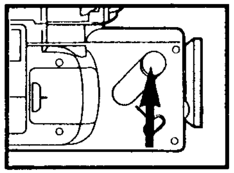
Relâcher la position MACRO

3



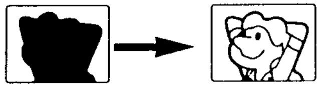
Pour relâcher le mode Macro, tourner le levier du zoom dans la direction de la flèche jusqu'à ce que le chiffre "9" dépasse la ligne index.

Compensation de contre-jour



- Appuyer sur la touche C.-J. Alors qu'elle est pressée, le diaphragme est ouvert de 1 – 2 diaphragmes de plus que réglé automatiquement.

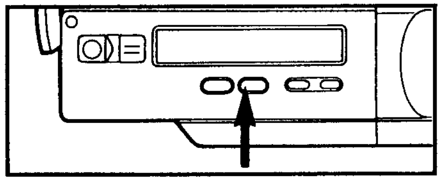
Quand il y a trop de lumière derrière le sujet, l'exposition correcte risque de ne pas être obtenue. Pour compenser ceci, utiliser la C.-J.



Sans C.-J. Avec C.-J.

Obturateur à grande vitesse

Le GR-45S dispose qu'un obturateur à grande vitesse sélectionnable qui permet de meilleurs enregistrements des mouvements rapides pour des arrêts sur image ou des ralentis nets et clairs.



1 Appuyer sur la touche OBTURAT. pour commuter sur l'obturateur électronique au 1/1000 seconde. Ce qui peut être fait pendant l'enregistrement ou dans tout autre mode. Il continue jusqu'à la prochaine pression pour revenir en mode standard.

2 Quand l'enregistrement de la scène d'action est terminé, commuter à nouveau sur la vitesse d'obturateur standard en appuyant sur la touche OBTURAT..

Remarques:
- Le mode d'obturateur à grande vitesse nécessite un peu plus d'éclairage que le mode d'obturateur standard. Par conséquent, l'avertissement d'éclairage insuffisant peut clignoter dans le viseur. Si c'est le cas, commuter sur le mode d'obturateur standard.
- La couleur des images peut être affectée dans le mode d'obturateur à grande vitesse si le sujet est éclairé par une source de lumière à décharge alternative comme les lampes fluorescentes ou à vapeur de mercure, etc.

RACCORDEMENT A UN TELEVISEUR POUR LA LECTURE

Le GR-45S comporte des circuits de lecture et permet la lecture de cassettes préenregistrées par un simple raccordement à un téléviseur.

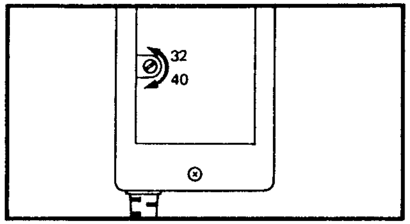
1 Retirer le câble d'antenne du téléviseur.

2 Raccorder le câble d'antenne à la borne ENTREE ANT du convertisseur HF.

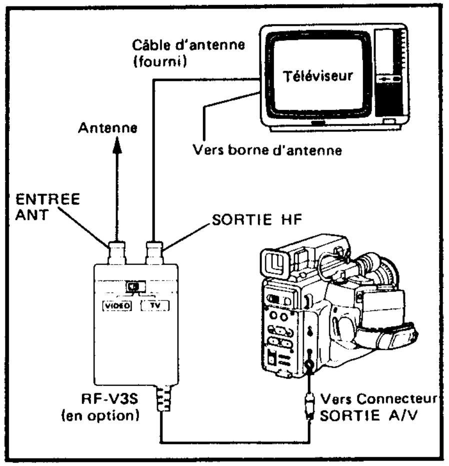
3 Raccorder la borne SORTIE HF du convertisseur HF à la borne d'antenne du téléviseur en utilisant le câble d'antenne fourni.

4 Raccorder le câble d'entrée vidéo/audio du convertisseur HF au connecteur SORTIE A/V du GR-45S.

5 Régler le canal de sortie du convertisseur HF sur votre CANAL VIDEO.



- **Vis de réglage du canal du convertisseur HF**
  Le convertisseur HF permet la lecture d'enregistrements vidéo et audio sur un téléviseur. Les signaux du convertisseur HF sont visibles sur un canal vacant qui n'est pas utilisé pour la diffusion dans votre région. La fréquence de sortie du convertisseur HF a été réglée pour correspondre à une émission sur le canal UHF 36. Pour visionner des images de lecture à partir du GR-45S avec votre téléviseur, syntoniser son canal AV spécifié sur le canal UHF 36. Si le canal 36 est utilisé pour les émissions dans votre région, régler à nouveau le canal de sortie du convertisseur HF sur l'un des canaux compris entre 32 et 40. Pour faire ce réglage, retirer le petit capot du dos du convertisseur HF et tourner la vis de réglage avec un tournevis pour syntoniser sur un canal vacant.



- **Réglage du canal du convertisseur HF**

1. Régler le canal AV du téléviseur sur l'un des canaux vacants.
2. Alimenter le GR-45S.
3. Mettre le GR-45S en mode de répétition (voir page 11).
4. Placer le commutateur VIDEO/TV du convertisseur HF sur VIDEO.
5. Tout en contrôlant le signal de sortie sur l'écran du téléviseur, tourner la vis de réglage du canal du convertisseur HF pour que l'image contrôlée devienne la plus claire possible.

- Quand vous voulez regarder des programmes de cassette vidéo, sélectionner toujours le canal AV sur le téléviseur qui a été syntonisé sur la fréquence de sortie du convertisseur HF.

Précautions pour le RF-V3S (en option)
- Pour l'usage exclusif avec le VideoMovie GR-45S.
- Ne pas démonter ni modifier le RF-V3S.
- Ne pas l'exposer à des chocs violents.
- Débrancher l'appareil raccordé pendant les orages. (Ne jamais toucher au câble d'antenne.)

ATTENTION:
Pour regarder des enregistrements du GR-45S avec un téléviseur, utiliser un téléviseur ayant un canal AV spécifié et utiliser ce canal AV comme CANAL VIDEO, sinon l'image de lecture risque d'être déformée avec des vibrations et des courbures. Les canaux AV sont des canaux exclusifs pour la lecture vidéo; comme des circuits AFC sont appliqués à ces canaux, les images de lectures peuvent être stabilisées. Les téléviseurs récents ont un ou plusieurs canaux AV.

FONCTIONNEMENT

Visionnement des cassettes vidéo lues avec le GR-45S
Pour visionner des cassettes vidéo ou contrôler l'enregistrement, placer le commutateur VIDEO/TV du convertisseur HF sur VIDEO et le sélecteur de canal du téléviseur sur le canal correspondant au canal de sortie HF.

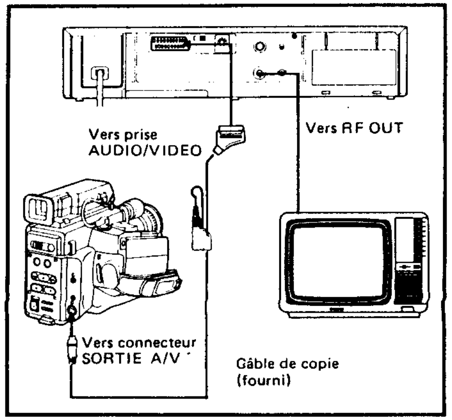
Visionnement des programmes télévisés
Placer le commutateur VIDEO/TV sur TV, et le téléviseur fonctionnera comme d'habitude.

COPIE DE BANDE OU MONTAGE

Copie sur un magnétoscope standard

Raccordement
1. Raccorder le connecteur SORTIE A/V du GR-45S à la prise AUDIO/VIDEO du magnétoscope en utilisant le câble de sortie A/V fourni.
2. Raccorder un téléviseur au magnétoscope pour contrôler l'image pendant la copie.
3. Placer le commutateur COPIE M./A. sur M.

Fonctionnement
- Mettre le GR-45S en mode de lecture et le magnétoscope raccordé en mode d'enregistrement pour copier l'enregistrement. Pour sortir du montage des séquences non désirées, appuyer sur la touche PAUSE de l'enregistreur.

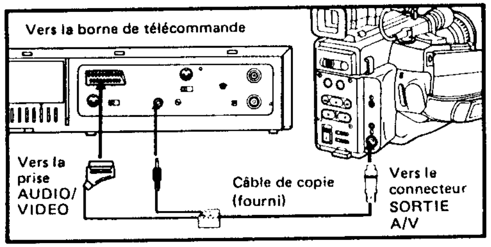


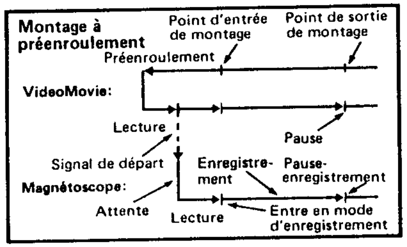
Utilisation du système de commande de montage

Cette fonction est disponible en utilisant des magnétoscopes JVC précisés disposant d'une borne de télécommande. Ce système de commande de montage permet de commander le magnétoscope raccordé en utilisant les commandes du VideoMovie, système à préenroulement pour des montages sans trou de transition ni distorsion.

Raccordement

1. Raccorder le connecteur SORTIE A/V du GR-45S à la prise AUDIO/VIDEO et à la borne de télécommande du magnétoscope.
2. Raccorder un téléviseur au magnétoscope pour contrôler l'image pendant le montage.
3. Placer le commutateur COPIE M./A. sur M.


Vers la borne de télécommande
Vers la prise AUDIO/VIDEO
Câble de copie (fourni)
Vers le connecteur SORTIE A/V



Fonctionnement

Le montage peut être commencé à partir du mode d'arrêt ou d'arrêt sur image.

●Pour copier une bande

1. Mettre l'alimentation du VideoMovie.
2. Mettre l'alimentation du magnétoscope.
3. Mettre la platine en mode de pause-enregistrement.
4. Appuyer sur la touche CONTROLE ENR./MONT. pour commencer le montage. La bande est chargée, puis le montage commence.
5. La bande s'arrête si la touche PAUSE ou ARRET du GR-45S est pressée ou si le compteur atteint la valeur "0M".
6. Le magnétoscope s'arrête d'enregistrer et passe en mode de pause-enregistrement.

●Pour le montage

1. Mettre l'alimentation du VideoMovie.
2. Mettre l'alimentation du magnétoscope.
3. Mettre la platine en mode de pause-enregistrement.
4. Localiser le point d'entrée de montage par la lecture, l'avance rapide, le réembobinage ou la recherche accélérée, et appuyer sur la touche PAUSE.
5. Appuyer sur la touche CONTROLE ENR./MONT. pour commencer le montage.
6. La bande s'arrête si la touche PAUSE ou ARRET du GR-45S est pressée ou si le compteur atteint la valeur "0M".
7. Le magnétoscope s'arrête d'enregistrer et passe en mode de pause-enregistrement.

Remarque:

Quand la touche MONT. est pressée à partir du mode d'arrêt sur image, la bande est réembobinée sur 5 secondes de programme. L'indicateur de lecture clignote sur l'affichage LCD pour indiquer que le réembobinage est en cours. Après préenroulement, la séquence préenroulée est d'abord lue pour stabiliser le défilement de la bande. Pendant la lecture du GR-45S, il donne un signal de départ au magnétoscope en attente dans le mode de pause-enregistrement pour commencer la lecture et puis passer en mode d'enregistrement au point d'entrée de montage, alors que le GR-45S continue la lecture. L'indicateur de commande de montage apparaît sur l'affichage LCD pendant la copie.

Réglage du point de sortie de montage en utilisant la mémoire de compteur

Dans les procédures précédentes, la mémoire de compteur peut être utilisée pour placer le point de sortie de montage avant de faire le montage, pour que le VideoMovie arrête automatiquement la lecture au point défini. Si le point de sortie est à régler de cette façon, le faire après l'étape 3 du fonctionnement pour la copie.

1. Localiser le point de sortie de montage voulu sur la bande du VideoMovie.
2. Appuyer sur la touche PAUSE du Video-Movie.
3. Remettre à "0" le compteur du VideoMovie.
4. Appuyer sur la touche MEMO. du compteur du VideoMovie.
5. Le VideoMovie passe en mode de pause, et le magnétoscope passe en mode de pause-enregistrement.

Remarque:

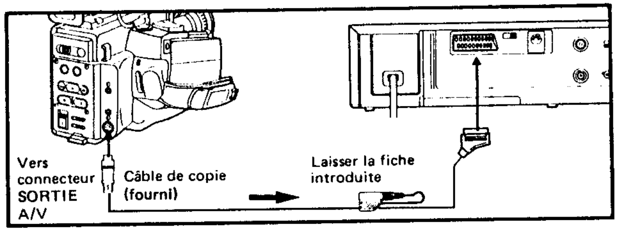
Quand la bande atteint le point de sortie de montage préréglé pendant la copie, il peut s'arrêter légèrement avant ou après le point défini sur la bande.

UTILISATION DU GR-45S COMME CAMERA VIDEO

Pour la documentation continue d'un événement long, le GR-45S peut être utilisé comme une caméra vidéo indépendante avec un magnétoscope portable ou de salon.

Utilisation d'un magnétoscope non équipé d'une borne de télécommande

- ●Raccorder le connecteur SORTIE A/V du GR-45S à la prise AUDIO/VIDEO du magnétoscope en utilisant le câble de sortie A/V fourni.



Fonctionnement

1. Appuyer sur la touche MONITEUR. Le signal de sortie de la caméra est alors disponible via le câble de sortie A/V. .
2. Placer le magnétoscope raccordé en mode d'enregistrement. L'enregistrement commencera. La marche/arrêt de la bande doit être commandée par les touches du magnétoscope.

Remarque:

- ●Dans cette configuration, il est possible d'obtenir un enregistrement continu et un enregistrement monté du même événement simultanément, car la touche de marche/arrêt du GR-45S commande seulement la bande qu'il contient alors que l'autre bande chargée dans le magnétoscope raccordé continue à défiler. Pour enregistrer sur la bande du GR-45S, suivre la même procédure que celle mentionnée précédemment: appuyer sur ENR. puis sur la touche de marche/arrêt.

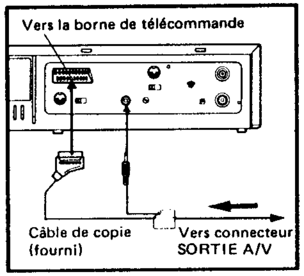
Utilisation d'un magnétoscope équipé d'une borne de télécommande ou d'un connecteur de caméra à 10 broches

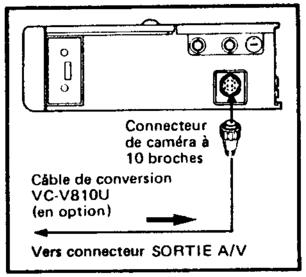
Pour un magnétoscope avec une borne de télécommande

- ●Raccorder le connecteur SORTIE A/V du GR-45S à la prise AUDIO/VIDEO et à la borne de télécommande du magnétoscope en utilisant le câble de copie en option.

Pour un magnétoscope avec un connecteur de caméra à 10 broches

- ●Raccorder le connecteur SORTIE A/V du GR-45S au connecteur de caméra à 10 broches du second magnétoscope en utilisant le câble de conversion VC-V810U en option.




Connecteur de caméra à 10 broches
Câble de conversion VC-V810U (en option)
Vers connecteur SORTIE A/V

Fonctionnement

1. Appuyer sur la touche MONITEUR.
2. Placer le magnétoscope raccordé en mode d'attente d'enregistrement (Pause-enregistrement).
   - ●L'indication de mode dans le viseur correspond à l'état du magnétoscope raccordé.
3. Appuyer sur la touche marche/arrêt du GR-45S pour commencer l'enregistrement.

Remarque:

- ● Pour enregistrer sur la bande du GR-45S, appuyer sur la touche ENR. et puis sur la touche de marche/arrêt.

Précautions

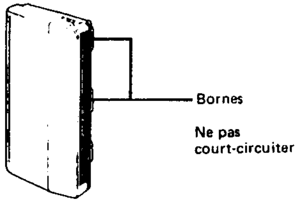
- ●L'alimentation n'est pas fournie au GR-45S à partir du magnétoscope raccordé. Une alimentation indépendante est requise pour le GR-45S et le magnétoscope.
- ●Si vous arrêtez l'enregistrement en appuyant sur la touche de marche/arrêt du GR-45S, le magnétoscope raccordé s'arrête aussi en mode de pause. Cependant, le signal de commande de pause n'est pas transmis au magnétoscope raccordé dans les cas suivants et, par conséquent, le magnétoscope repartira automatiquement:
  (1) si l'alimentation du GR-45S est coupée ou si la batterie devient déchargée.
  (2) si le câble VC-V810U est débranché.
  Par conséquent, avant de remplacer la batterie ou la bande pour le GR-45S, placer le magnétoscope raccordé soit en mode d'arrêt ou de verrouillage d'enregistrement.

RECHARGE DE LA BATTERIE

Pour recharger la batterie, utiliser l'adaptateur secteur/chargeur de batterie AA-V5S (fourni/en option) ou le chargeur de batterie à partir de la voiture BH-V5E (en option).

QUELQUES MOTS SUR LES BATTERIES EXCLUSIVES BN-V5GU/BN-V6GU/BN-V7GU

Les batteries BN-V5GU/V6GU/V7GU sont des batteries au cadmium-nickel. Respecter les points suivants pour obtenir le meilleur de leurs caractéristiques.



Gammes de température:
La durée de charge est basée sur une température ambiante de 20°C. Plus la température est basse, plus la durée de charge est longue.

Pour la charge:	10°C à 35°C
Pour le fonctionnement:	0°C à 40°C
Pour le stockage:	−10°C à 30°C

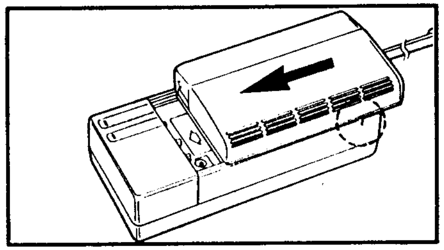
La batterie est laissée déchargée pour le transport.
La charger avant l'utilisation.
BIEN LIRE AVEC ATTENTION LES PRECAUTIONS JOINTES AVEC LA BATTERIE.

Procédure de recharge

Durée de recharge

BN-V5GU 50 mn	BN-V6GU 70 mn
BN-V7GU 80 mn	

- La durée de charge varie en fonction de la température ambiante et des conditions de la batterie.



1 Raccorder le cordon d'alimentation à une prise secteur.
(L'indicateur SECTEUR s'allumera.)

2 Aligner les repères de la batterie et de l'adaptateur.

3 Glisser la batterie dans la direction de la flèche jusqu'à ce qu'elle s'enclenche.

4 Quand la charge est terminée, l'indicateur CHARGE s'éteint.

PRECAUTIONS A OBSERVER
- Si vous l'utilisez près d'une radio, l'adaptateur secteur/chargeur de batterie AA-V5S fourni risque d'interférer avec la réception.
- Eviter de laisser pénétrer des liquides inflammables, de l'eau et des objets métalliques dans l'appareil.
- Ne pas démonter ni modifier l'appareil.
- Ne pas lui faire subir de chocs.
- Ne pas le placer directement à la lumière du soleil.
- Eviter de l'utiliser dans des endroits très chauds ou très humides.
- Eviter de l'utiliser dans des endroits soumis à des vibrations.

Remarque:
Le chargeur de batterie à partir de la voiture BH-V5E en option peut également charger les batteries. Pour des détails se reporter aux instructions du BH-V5E.

Durée d'enregistrement pour le GR-45S

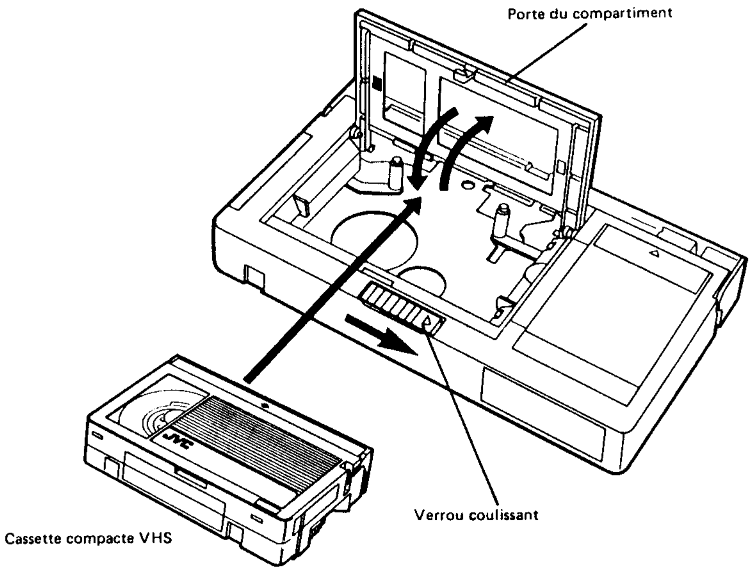
BN-V5GU 25 mn	NB-V6GU 60 mn
BN-V7GU 80 mn	

- La durée d'enregistrement par recharge est influencée par la durée d'attente d'enregistrement, la fréquence du zooming. etc. Il est plus sûr d'avoir des batteries de rechange.

UTILISATION DE L'ADAPTATEUR DE CASSETTE (fourni)

Les cassettes vidéo compactes VHS enregistrées avec le GR-45S peuvent être lues avec un appareil VHS standard en utilisant l'adaptateur de cassette C-P5U fourni.
(Une cassette vidéo compacte installée dans l'adaptateur est entièrement compatible avec un appareil VHS standard pour l'enregistrement et la lecture.)

- **Adaptateur de cassette C-P5U**
  Fonctionnant sur pile, le C-P5U effectue automatiquement le chargement et le déchargement de la bande.

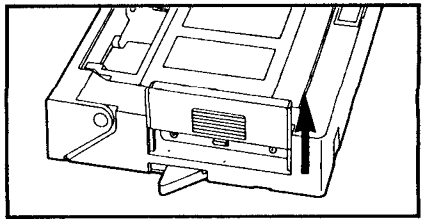


Pour plus de détails, se reporter au manuel d'instructions du C-P5U.

Remarque:
- Pendant la lecture à effets spéciaux (ralenti, arrêt sur image etc.) l'image risque de vibrer ou des barres de bruit peuvent apparaître sur l'écran.

Mise en place de la pile dans l'adaptateur de cassette

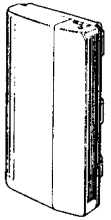
Retirer le couvercle du compartiment à pile en le glissant vers le haut.
Installer une pile R6 et replacer le couvercle.



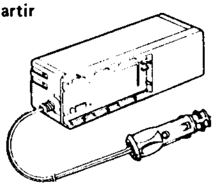
DIVERS SYSTEMES POSSIBLES

Pour un plaisir maximum, en plus des accessoires fournis, faites encore plus avec les accessoires en option en fonction de la situation.

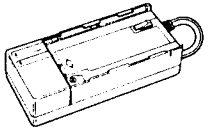
- **Batterie normale BN-V5GU**
  ☞ **Page 23**
- **Batterie haute capacité BN-V6GU**
  ☞ **Page 23**
- **Batterie très haute capacité BN-V7GU**
  ☞ **Page 23**



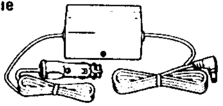
- **Chargeur de batterie à partir de la voiture BH-V5E**
  ☞ **Pages 5 et 23**
  Utilisé pour charger la batterie ou alimenter le GR-45S en utilisant l'énergie de la batterie de la voiture.



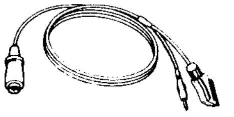
- **Adaptateur secteur/chargeur de batterie AA-V5S**
  ☞ **Pages 5 et 23**
  Utilisé pour alimenter le GR-45S à la maison sur le secteur ou pour charger les batteries.



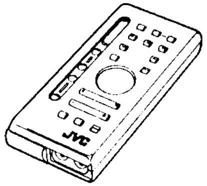
- **Adaptateur pour batterie automobile AP-P1E**
  ☞ **Page 5**
  Pour l'alimentation à partir d'une batterie automobile.



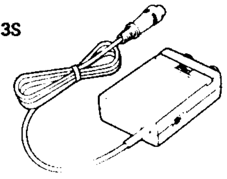
- **Câble de copie AV VC-V896E**
  ☞ **Pages 20, 21 et 22**
  Utilisé pour raccorder le GR-45S à un téléviseur muni de connecteurs d'entrée audio/vidéo pour la lecture, ou à un second magnétoscope pour la copie.



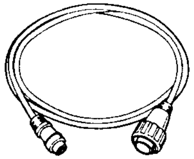
- **Générateur de caractères CG-P50S**
  ☞ **Page 27**
  Permet la surimpression de titres, de dates et du temps écoulé pendant l'enregistrement.



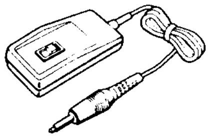
- **Convertisseur HF RF-V3S**
  ☞ **Pages 19 et 20**
  Utilisé pour raccorder le GR-45S à un téléviseur ordinaire pour la lecture.



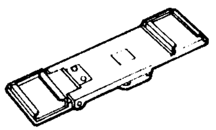
- **Câble de conversion VC-V810U**
  ☞ **Page 22**
  Pour raccorder le GR-45S à un magnétoscope avec un connecteur de caméra à 10 broches.



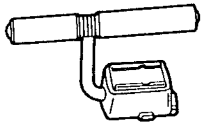
- **Boîtier de télécommande RM-P1U**
  ☞ **Page 27**
  Pour la mise en marche/à l'arrêt de l'enregistrement à distance.



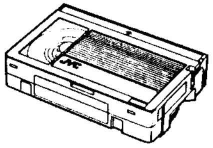
- **Adaptateur de sabot CU-V410U**
  ☞ **Page 27**
  Utilisé pour fixer microphone, générateur de caractères etc.



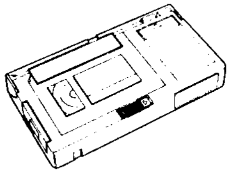
- **Poignée de transport VU-V130U**
  ☞ **Page 27**
  Utilisée pour porter le GR-45S.



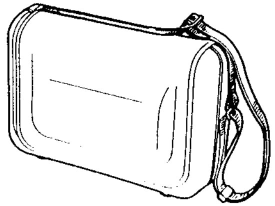
- **Cassette vidéo compacte EC-30**
  ☞ **Page 3**
  Pour 30 minutes d'enregistrement et de lecture en mode VN et 60 minutes en mode LD.



- **Adaptateur de cassette C-P5U**
  ☞ **Page 24**
  Permet d'utiliser la cassette EC-30 sur des appareils VHS conventionnels.

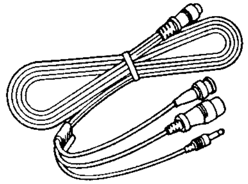


- **Sac de transport CB-V40U**
  Utilisé pour transporter le GR-45S avec ses accessoires de base.

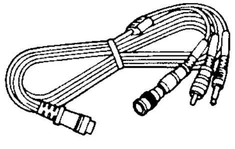


Câbles de copie AV
Pour le raccordement à des magnétoscopes qui n'acceptent pas le VC-V896E, ces câbles sont également disponibles en option.

- **Câble de copie AV VC-V856E**



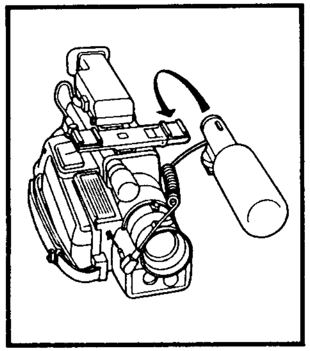
- **Câble de sortie AV VC-V826E**



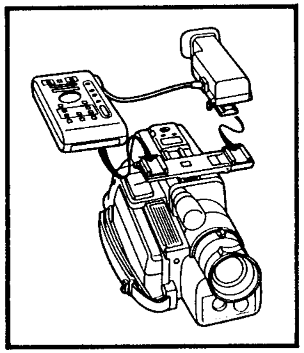
Choisir le câble approprié en fonction du type de magnétoscope que vous avez.

ADAPTATEUR DE SABOT (en option)/ POIGNEE DE TRANSPORT (en option)

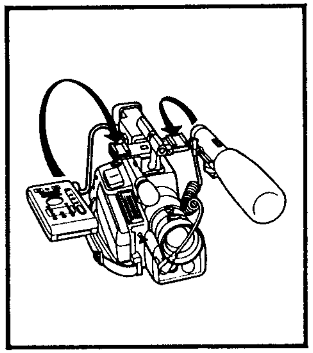
Fixation d'un microphone extérieur en utilisant l'adaptateur de sabot.



Fixation d'un générateur de caractères en utilisant l'adaptateur de sabot.



Fixation d'un générateur de caractères et d'un microphone externe en utilisant l'adaptateur de sabot et la poignée de transport.



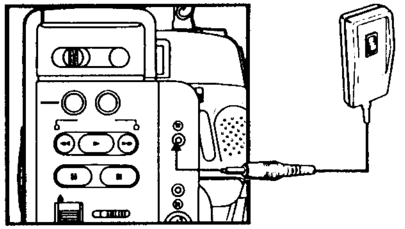
ATTENTION
- Ne pas fixer de lampe vidéo, sa chaleur peut causer un mauvais fonctionnement du GR-45S.

Remarques:
- Ne pas régler l'angle du viseur en utilisant l'adaptateur de sabot.
- Maintenir la poignée de transport en position haute pour fixer des accessoires.
- Faire passer le cordon du microphone derrière l'adaptateur de sabot.

BOITIER DE TELE-COMMANDE (en option)

Le boîtier de télécommande RM-P1U (en option) permet le contrôle à distance de la marche/arrêt de l'enregistrement.

1



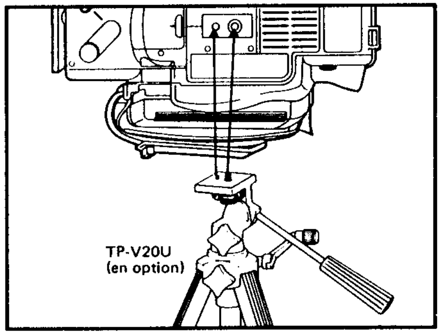
Brancher le câble de télécommande dans le connecteur TELEC.

2 Appuyer sur la touche d'attente pour engager le mode d'attente d'enregistrement.

3 Pour commencer l'enregistrement, placer le commutateur de la télécommande sur ENR; pour arrêter momentanément, le placer sur PAUSE.

Remarque:
Le fondu ne fonctionnera pas si le boîtier de télécommande est raccordé.

MONTAGE SUR TREPIED



Aligner la vis et le taquet de direction de caméra du trépied sur la prise de montage sur un trépied et l'orifice du taquet et serrer fermement la vis.

INFORMATIONS SUPPLEMENTAIRES

Qu'est-ce que la température de couleur?
La lumière est composée de plusieurs couleurs en proportions différentes. Une relation existe entre la température d'une source lumineuse et les couleurs de la lumière émise. Quand la température augmente, la couleur de la lumière varie de rouge, orange, jaune, blanc et bleu dans cet ordre. La "température de couleur" est une valeur qui représente les différences de couleurs parmi les sources lumineuses, mesurées en Kelvin. Une lumière bleutée a une température de couleur plus élevée qu'une lumière rougeâtre.

Qu'est-ce que la balance des blancs?
C'est le moyen de faire pour que les couleurs paraissent naturelles à la télévision. Du fait qu'une caméra ne peut pas s'adapter comme l'oeil humain, si la source lumineuse est rougeâtre, les sujets blancs dans cette lumière seront enregistrés comme rougeâtres. Le réglage de la balance des blancs est réalisé pour compenser les variations de la température de couleur de la lumière pour que les blancs soient reproduits comme blancs. Si la balance des blancs est correcte, toutes les autres couleurs seront correctes. Le GR-45S peut effectuer automatiquement le réglage de la balance des blancs en mode entièrement automatique. Cependant, si l'éclairage est insuffisant, le réglage de la balance des blancs ne peut pas être effectué. Par conséquent, pour obtenir des couleurs correctes, un éclairage suffisant est essentiel.

Qu'est-ce que la luminance?
C'est l'intensité de brillance d'une lumière, exprimée en lux. Le GR-45S est conçu pour fournir les meilleures images sous des conditions d'éclairage de 700 lux, bien que les prises de vue soient possibles jusqu'à 10 lux. Pour obtenir de bonnes images sous une lumière très vive, l'utilisation d'un filtre ND (densité neutre) est recommandée. (Voir le tableau sur la droite.)

Comment obtenir de bonnes images en couleur
Le moyen le plus simple est de fournir un éclairage suffisant (proche de la luminance de référence de la caméra) et de régler précisément la caméra sur la température de couleur de cet éclairage. Si des sources lumineuses de températures de couleur différentes sont utilisées ensemble, le réglage précis de la température de couleur est très difficile. Par exemple, si la lumière naturelle est mélangée avec de la lumière artificielle, ce qui arrive souvent près des fenêtres, les couleurs correctes du sujet sont difficiles à obtenir. Il est recommandé dans de tels cas, de fermer les rideaux de la pièce pour empêcher la lumière extérieure de rentrer. De même, lorsque des appareils d'éclairage artificiel sont utilisés, ils doivent avoir la même température de couleur. Par exemple, il est recommandé de ne pas utiliser ensemble des lampes à incandescence ou halogènes avec un éclairage fluorescent.

Températures de couleur de différents éclairages artificiels

Type d'éclairage		Température de couleur
Lampe au tungstène pour l'usage domestique		2800 K
Lampe au tungstène pour l'usage photographique		3200 K
Lampe aux halogènes-quartz		
Lampe bleue pour l'usage photographique		5000 K
Lampes fluorescentes	Blanc chaud	3500 K
	Blanc	4500 K
	Type lumière du jour	6500 K

Tableau de luminance
- Les valeurs de ce tableau sont approximatives et vous sont données comme référence.

	Unité: lux	
Filtre ND souhaité	100.000	• Ciel clair, à midi, sous le soleil (100.000)
Gamme de l'usage habituel		• Ciel clair (10 h), sous le soleil (65.000) • Ciel clair (15 h), sous le soleil (35.000) • Ciel nuageux (midi), sous le soleil (32.000) • Ciel nuageux (10 h), sous le soleil (25.000)
	10.000	
		• Près de la fenêtre dans l'après-midi (3.500)
	2.000	• Ciel nuageux (une heure après le lever du soleil (2.000)
	1.000	• Ciel clair (une heure avant le coucher du soleil (1.000)
	600	• Comptoirs des grands magasins (500 – 700)
Eclairage souhaité	500	• Centre de bowling (500) • Bureau sous un éclairage fluorescent (400 – 500) • Bibliothèque (400 – 500) • Lumière directe d'un flash à 1 m (250)
	100	• Réverbères la nuit (150 – 200)
	80	
	Eclairage minimum pour un objet	
	15	• Briquet (à 30 cm) (15)
	10	• Lumière d'une bougie (à 20 cm) (10 – 15)

EN CAS DE DIFFICULTE

Ce qui semble au départ être une panne n'en est pas toujours une. Vérifier d'abord les points suivants .

Symptômes	Points à vérifier
Alimentation	
Aucune alimentation n'est fournie.	● La batterie est-elle installée correctement? ● La batterie est-elle chargée? ● L'appareil d'alimentation est-il correctement raccordé? ● L'interrupteur ALIMENT. de l'adaptateur secteur raccordé est-il sur M.?
Enregistrement	
Enregistrement impossible.	● Vérifier que la languette de sécurité est bien en place. Voir page 3.
La couleur des images diffère de la couleur normale du sujet.	● Dans le cas du mode de balance des blancs manuelle, vérifier le réglage de la touche ☀/▭/✱ .
Aucun son n'est enregistré avec un microphone externe.	● Le commutateur du microphone est-il sur M.?
L'enregistrement ne commence pas.	● Avez-vous d'abord appuyé sur la touche d'attente ENR.?
Lecture	
La bande défile mais il n'y a pas d'image sur l'écran.	● Le commutateur VIDEO/TV du convertisseur HF est-il sur VIDEO? ● Le téléviseur est-il réglé sur votre canal vidéo?
Des barres de bruit apparaissent dans l'image de lecture.	● Utiliser la commande ALIGNEMENT pour réduire les barres de bruit.
L'image de lecture est brouillée ou interrompue alors que les émissions TV reçues sont claires.	● Les têtes vidéo sont peut-être sales ou usées. Pour un nettoyage ou un remplacement, consulter votre revendeur JVC le plus proche.
Défilement de la bande	
La bande s'arrête en avance rapide ou en réembobinage.	● L'indication "M" est-elle visible sur l'affichage LCD? Si oui, appuyer sur la touche MEMO. pour annuler la fonction de mémoire.
L'avance rapide ou le réembobinage est impossible.	● La bande est-elle déjà réenroulée jusqu'au bout sur une bobine ou sur l'autre.
Autre	
Aucune fonction n'est disponible avec plus de deux indicateurs de mode allumés.	● Si ceci se produit en utilisant un appareil d'alimentation autre qu'une batterie, commuter l'interrupteur ALIMENT. sur marche et arrêt. Dans le cas d'une batterie, la remplacer par une autre qui est chargée.
Des lignes verticales blanches apparaissent en prenant un sujet très lumineux.	● Ceci peut se produire quand l'arrière-plan contraste beaucoup avec le sujet. Ceci est normal.

Le GR-45S est un appareil commandé par micro-ordinateur. Du bruit et des interférences externes risquent d'empêcher un fonctionnement correct. Dans ce cas, d'abord débrancher l'appareil d'alimentation (batterie, adaptateur secteur, etc.); puis le rebrancher et procéder comme d'habitude depuis le début.

CARACTERISTIQUES TECHNIQUES

Format	: Standard VHS
Alimentation	: CC 9,6 V ⎓
Consommation	: 8,5 W
Système de signal	: SECAM
Système d'enregistrement	: Luminance: enregistrement FM Couleur: enregistrement direct à division par 4 de la sous-porteuse Conforme au standard VHS
Cassette	: Cassette VHS-C
Vitesse de bande (VN)	: 23,39 mm/s
(LD)	: 11,70 mm/s
Durée maximale d'enregistrement (VN)	: 30 mn (avec cassette EC-30)
(LD)	: 60 mn (avec cassette EC-30)
Vidéo	
Sortie	: 1,0 Vcc, 75 ohms, asymétrique (via le connecteur SORTIE A/V)
Rapport signal/bruit	: Plus de 42 dB (avec le mesureur de bruit Rohde & Schwarz)
Audio	
Niveau de sortie	: –6 dBs, 1 kohm (via le connecteur SORTIE A/V)
Entrée de microphone	: –68 dBs, haute impédance, asymétrique
Capteur	: CCD de 1/2"
Eclairage minimal requis	: 10 lux (à F/1,4)
Gamme d'éclairage	: 10 – 100.000 lux
Objectif	: F/1,4 – 2,0, f = 9 – 54 mm, zoom électrique 6:1 à deux vitesses avec commande de diaphragme automatique et position macro, diamètre du filtre 49 mm
Viseur	: Electronique avec tube à rayons cathodiques noir et blanc de 0,6"
Obturateur à grande vitesse sélectionnable	: 1/1000 s
Commutation de la température de couleur	: Commutable (3.200 K/4.500 K/5.500 K)
Réglage de la balance des blancs	: Automatique/standard préréglé
Température de fonctionnement	: 0°C à 40°C
Humidité de fonctionnement	: 35 à 80%
Température de stockage	: –20°C à 50°C
Poids	: 1,2 kg (avec le viseur)
Dimensions	: 110(L) x 149(H) x 243(P) mm (avec le viseur)

AA-V5S CARACTERISTIQUES TECHNIQUES

Alimentation	: CA 110 – 240 V∿, 50/60 Hz
Consommation	: 21 watts
Sortie	: CC 14 V ⎓ 1,1 A (charge) CC 9,6 V ⎓ 1,2 A (VideoMovie)
Système de charge	: Courant constant, détection de crête, contrôlé par minuterie
Dimensions	: 68(L) x 38(H) x 150(P) mm
Poids	: Environ 380 g

C-P5U CARACTERISTIQUES TECHNIQUES

Type	: Adaptateur de cassette VHS
Dimensions	: 188(L) x 25(H) x 104(P) mm
Poids	: 235 g
Accessoire	: Pile "R6" x 1

Accessoires fournis:

Adaptateur secteur/chargeur de batterie	AA-V5 S
Adaptateur de cassette	C-P5U
Cassette vidéo	EC-30
Batterie	BN-V6GU
Coffret de transport	CB-V55U
Câble de cope AV	VC-V896E
Bandoulière	
Viseur électronique	
Capuchon d'objectif	
Bonnette d'objectif	
Pile pour le fonctionnement de l'horloge	

Pour les accessoires en option, se reporter aux pages 25 et 26.

Les caractéristiques techniques sont pour le mode VN à moins d'indication contraire.

Présentation et caractéristiques modifiables sans préavis.

SECTION 1
GENERAL DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Electronic viewfinder (E. VF)

Disconnect the 8-pin connector as shown in Fig. 1-1-1. Slightly pressing the slide knob in the direction of Ⓐ , move the electronic viewfinder in the direction of Ⓑ to remove it.

1.1.2 E. VF shoe, front cover, cassette cover and upper case

1. See Fig. 1-1-2(A)
   Remove two screws Ⓐ securing the VF shoe cover first, and then, raise the VF shoe spring's pawls portion upward with a screwdriver (–) and move it in the direction of the arrow Ⓒ to remove the VF shoe spring.
2. Remove three screws Ⓓ shown in Fig. 1-1-2(A) to remove the VF shoe.
3. Remove screws Ⓔ and Ⓕ shown in Fig. 1-1-2(A) to remove the front cover.
4. Remove two screws Ⓖ shown in Fig. 1-1-2(B) to remove the cassette cover. Then, lift it in the direction Ⓗ .
5. Remove screws Ⓘ , Ⓙ , Ⓚ and Ⓛ shown in Fig. 1-1-2(B) to remove the upper case.
   Then, disconnect the connectors which connect the LCD module and the main board with flexible wires as shown in Fig. 1-1-2(C). And disconnect the connectors which connect the LCD module and the indicator board.

Notes:
- The screw Ⓚ shown in Fig. 1-1-2(B) is the longest one securing the optical bracket of the camera section.
- When disassembling and re-assembling this section, pay the most careful attention to the flexible wires as they are formed in soft films.

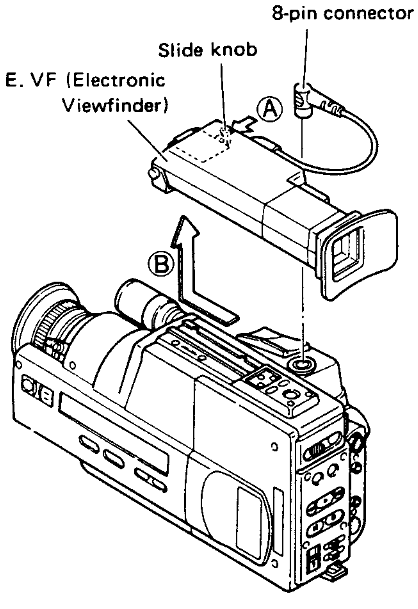

8-pin connector
Slide knob
E. VF (Electronic Viewfinder)
Ⓐ
Ⓑ

Fig. 1-1-1

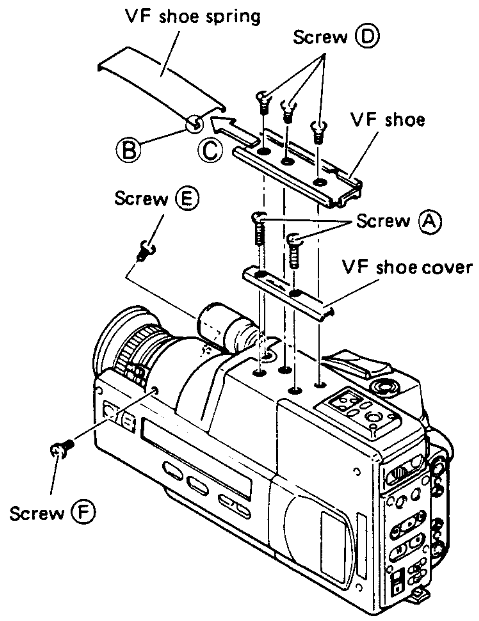

VF shoe spring
Screw Ⓓ
VF shoe
Ⓑ
Ⓒ
Screw Ⓔ
Screw Ⓐ
VF shoe cover
Screw Ⓕ

Fig. 1-1-2(A)

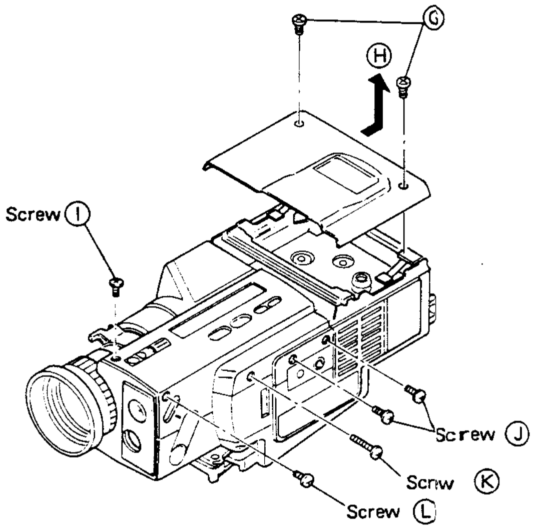

Ⓖ
Ⓗ
Screw Ⓘ
Screw Ⓙ
Screw Ⓚ
Screw Ⓛ

Fig. 1-1-2(B)

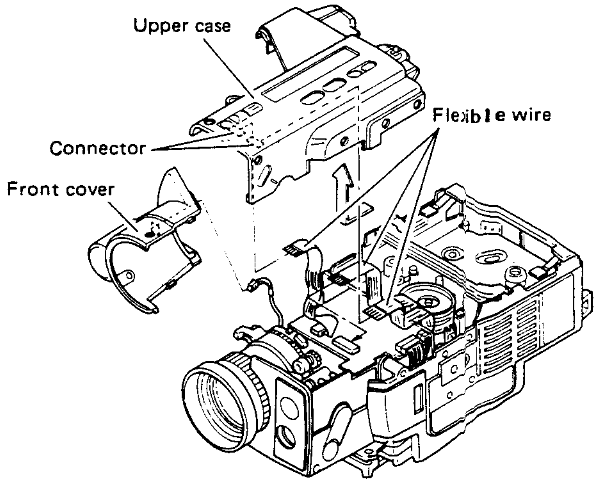

Upper case
Flexible wire
Connector
Front cover

Fig. 1-1-2(C)

1.1.3 Camera section

1. See Fig. 1-1-3.
   Remove screws Ⓐ and Ⓑ securing the front panel to remove it.
   Next, remove screws Ⓒ and Ⓓ securing the lower case and a screw Ⓔ securing the camera section. Then, the lower case and the lens can be disassembled, and at this stage, make sure to remove the flexible wire Ⓕ and connectors Ⓖ and Ⓗ.

Note: At the above procedure, pay attention to the flexible wires and other wires connecting the lower case and the camera section.

1.1.4 Deck section (Fig. 1-1-4)

1. Remove four screws Ⓐ securing the operation unit. At removing the operation unit, pay attention to the connectors connecting it with the deck section.
2. As indicated in Fig. 1-1-4, take out 3 screws Ⓑ, screw Ⓒ and 2 screws Ⓓ. Disconnect connectors Ⓔ, Ⓕ and Ⓖ. Remove the shoe bracket in the direction shown by arrow Ⓗ. The shoe bracket can be more easily removed by spreading the lower case in the direction shown by arrow Ⓘ.

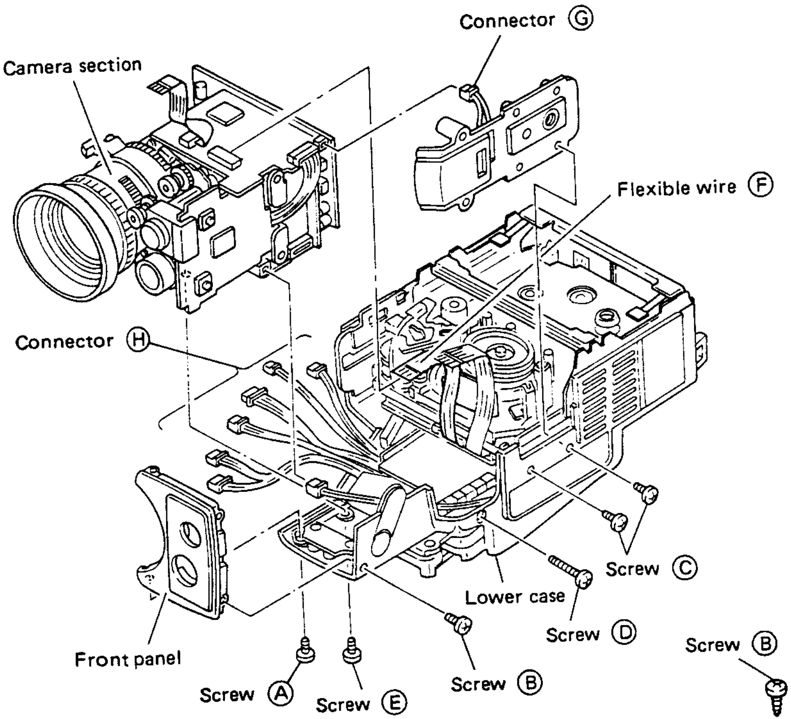

Connector Ⓖ
Camera section
Flexible wire Ⓕ
Connector Ⓗ
Screw Ⓒ
Lower case
Screw Ⓓ
Front panel
Screw Ⓐ
Screw Ⓔ
Screw Ⓑ

Fig. 1-1-3

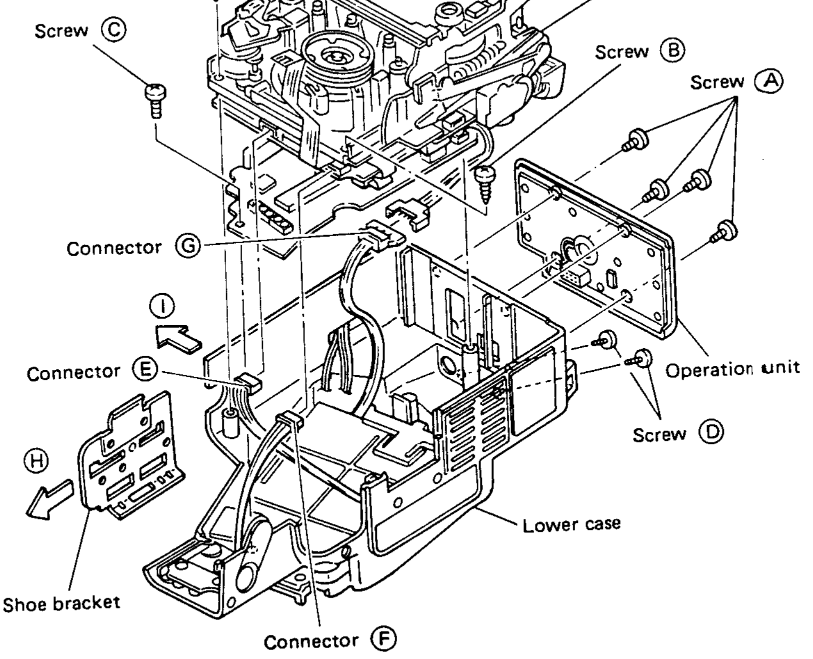

Screw Ⓑ
Screw Ⓑ
Deck (VTR) section
Screw Ⓒ
Screw Ⓑ
Screw Ⓐ
Connector Ⓖ
Ⓘ
Connector Ⓔ
Operation unit
Screw Ⓓ
Ⓗ
Lower case
Shoe bracket
Connector Ⓕ

Fig. 1-1-4

1.2 REMOVAL OF CIRCUIT BOARDS

1.2.1 Deck section

1. Remove the MIC AMP board after removing two screws Ⓐ and then disconnect connector Ⓒ Next, remove the MIC JACK board by removing screw Ⓑ . Shown in Fig. 1-2-1(A).
2. The TRIGGER board can be removed by removing the board bracket.
3. As indicated in Fig. 1-2-1(B), raise the cassette housing with one hand and shift the Y/C board downward with the other hand. The Y/C board together with connectors Ⓤ , Ⓥ and Ⓦ can be removed from the main board.
4. Remove screw Ⓘ shown in Fig. 1-2-1(B). Disconnect connectors Ⓙ , Ⓚ , Ⓛ , Ⓜ , Ⓝ and Ⓧ and the flexible wires Ⓗ and Ⓞ , and then remove the MAIN board with careful attention to connectors connecting the MAIN board and the deck section.
5. Remove the SENSOR board by removing four screws Ⓣ shown in Fig. 1-2-1(B).
6. Remove two screws Ⓟ to remove the MDA board, and carefully disconnect connectors Ⓠ, Ⓡ and Ⓢ between the MAIN and DRUM boards.

Note: When performing above the procedures, pay enough attention to flexible wires and every wiring of the deck section not to damage them.

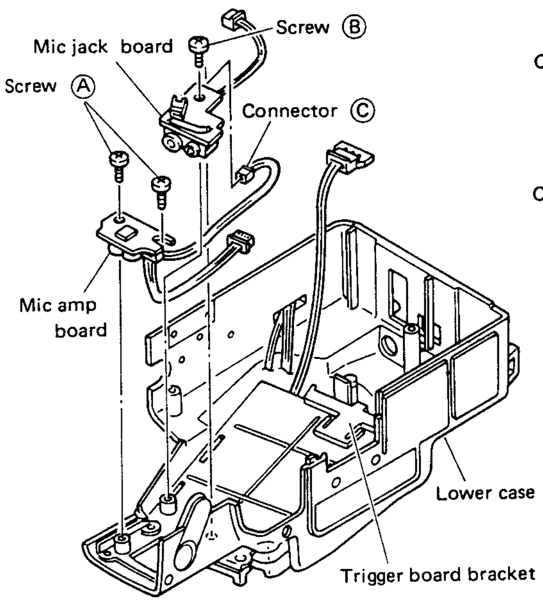

Screw Ⓑ
Mic jack board
Screw Ⓐ
Connector Ⓒ
Mic amp board
Lower case
Trigger board bracket

Fig. 1-2-1(A)

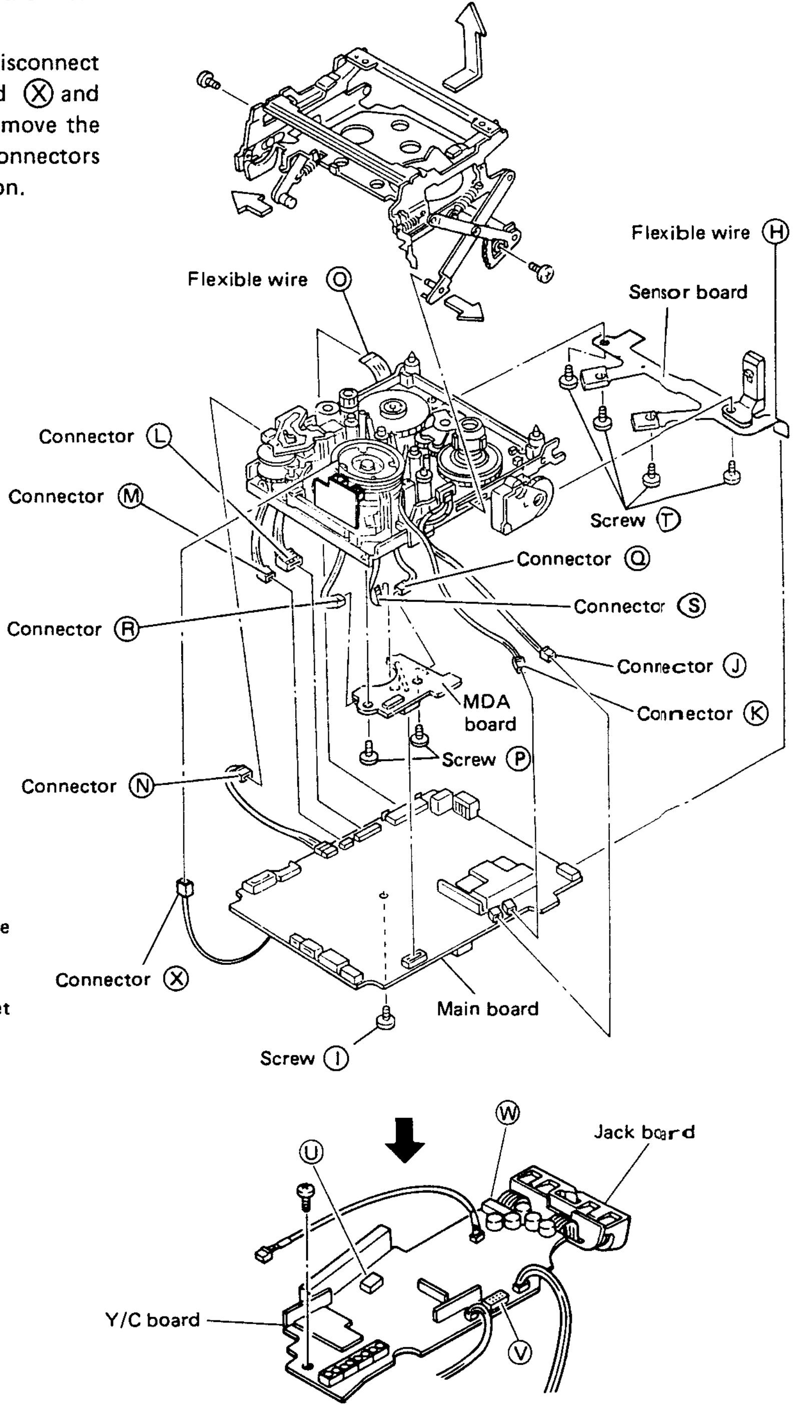

Flexible wire Ⓗ
Flexible wire Ⓞ
Sensor board
Connector Ⓛ
Connector Ⓜ
Screw Ⓣ
Connector Ⓠ
Connector Ⓢ
Connector Ⓡ
Connector Ⓙ
Connector Ⓚ
MDA board
Screw Ⓟ
Connector Ⓝ
Connector Ⓧ
Main board
Screw Ⓘ
Ⓦ
Jack board
Ⓤ
Y/C board
Ⓥ

Fig. 1-2-1(B)

1.2.2 Camera section

1. See Fig. 1-2-2.
   Remove two screws Ⓐ securing the VIDEO-1 board first, and remove two screws Ⓑ securing the FAW board. At this time, pay careful attention to the two washers Ⓒ tightened together with not to mis or drop them.
   As all boards except the VIDEO-1 board are wired with connectors each other, connectors between the camera section and the IND board/ENC board can be disengaged by drawing out the boards sidewards.
2. Carefully draw out the connector Ⓓ of the IND board since it is directly connected with the VIDEO boards. Next, disconnect the connector Ⓔ to remove the IND board.
3. After removing the insulator Ⓕ, disconnect connectors Ⓖ and Ⓗ connected directly with the VIDEO-1 board as shown in Fig. 1-2-2.
   The ENC board can be removed by disconnecting connectors Ⓘ and Ⓙ.
4. To remove the VIDEO-2 board, remove two screws securing the DC-DC converter (refer to the "Optical Block Assembly") and the converter from the camera section first since the VIDEO-2 board is directly connected to the VIDEO-1 board with the connectors.

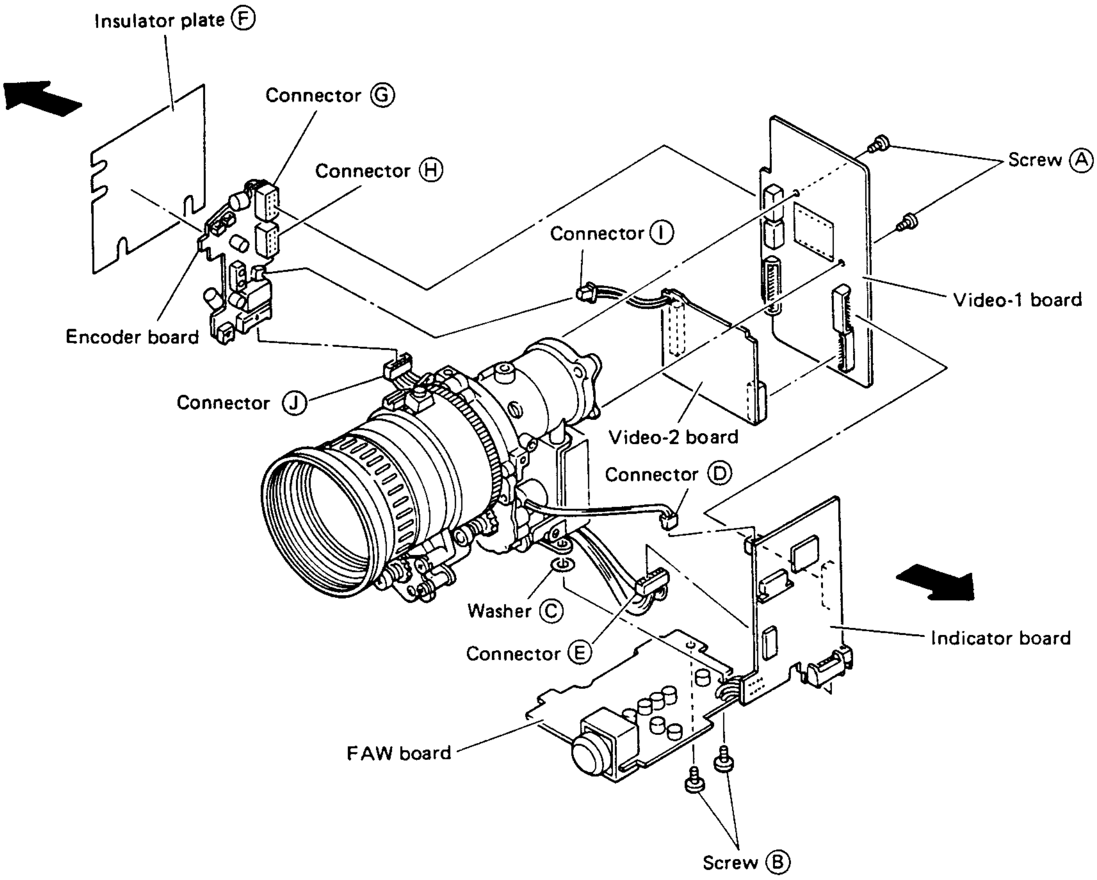

Insulator plate Ⓕ
Connector Ⓖ
Connector Ⓗ
Screw Ⓐ
Connector Ⓘ
Video-1 board
Encoder board
Connector Ⓙ
Video-2 board
Connector Ⓓ
Indicator board
Washer Ⓒ
Connector Ⓔ
FAW board
Screw Ⓑ

Fig. 1-2-2

1.3 REPLACEMENT OF IMAGE SENSOR

1.3.1 Precautions

1. When replacing the CCD image sensor, make sure to grounding it by soldering and so on since its characteristic against electrostatic breakdown is weaker than C-MOS LSIs.
2. Pay enough attention to the transparent glass and optical filter of the CCD image sensor so that it won't be dusty, soiled or damaged. If it is soiled with fingerprints, etc., clean gently with silicon lens tissue, chamois, etc.
3. An orange protector seal was applied to the transparent glass of CCD image sensors before shipment. When replacing, do not remove it just before assembling it to the optical block.
4. When soldering the CCD image sensor to the board, do it as fast as possible. If it takes a considerable long time, it causes discoloration of the optical filter by excessive heat.

1.3.2 Removal of CCD image sensor

1. Remove two screws Ⓑ fixing the VIDEO-1 board and the CCD image sensor and unsolder the latter first, and then draw out the CCD image sensor in the direction of the arrow mark to separate it from the VIDEO-1 board.
2. Remove three screws securing the filter holder Ⓒ, and remove the optical LPF Ⓓ and the rubber Ⓔ for the removal.

1.3.3 Installation of CCD image sensor

1. Remove the protector seal of a CCD image sensor Ⓖ and set it on the imager holder Ⓕ first, and then, assemble the space rubber Ⓔ , optical filter Ⓓ , and the filter holder Ⓗ in the above order as piling up them. At this stage, make sure not to missetting the CCD image sensor and imager holder in wrong direction. The optical filter Ⓓ should be placed with its white marking facing downwards and to the lens section.
   After that, fix the filter holder to the imager holder Ⓕ with three screws Ⓒ.
2. Paying attention to the direction, fix the imager holder Ⓕ to the optical block with two screws Ⓕ.
3. Carefully insert the CCD image sensor's pins which protrude from the imager holder Ⓕ into the jacks of the VIDEO-1 board, and then secure the board with two screws Ⓑ.
4. Solder the pins of the CCD image sensor to the VIDEO-1 board. At this time, use care to avoid overheating.
5. Set the lens to MACRO. Confirm absence of vignetting at the image corners. If absent, the picture angle and centering are acceptable.

1.3.4 Adjustment

1. For correcting picture's center and diagonal image, loosen two screws Ⓑ of the VIDEO-1 board and move the whole of the board back and forth.
2. Perform back focus adjustment.
3. Electrical adjustment is not necessary.

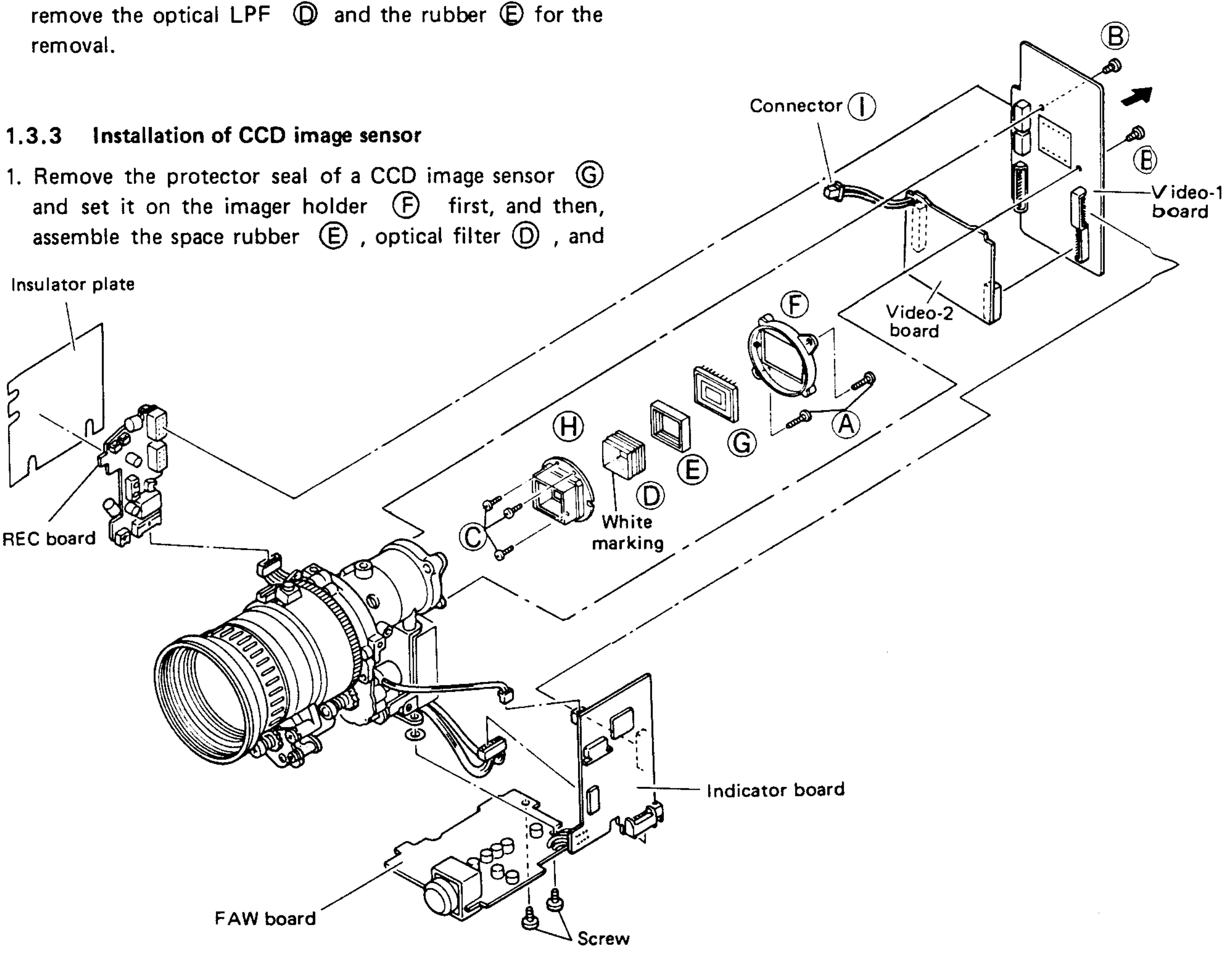


Fig. 1-3-1

1.3.5 Replacement of AF unit

- **Removal procedure**

1. Separate the camera section from the deck section, and remove the two screws Ⓐ.
2. Unsolder IC1 (CCD) on the VIDEO-1 board.
3. Draw out the INDICATOR board and ENCODER board which are directly connected to the VIDEO-1 board in the direction of arrow marks respectively.
4. The camera and deck sections can be separated by drawing out the VIDEO-1 board from the CCD in the direction of the arrow shown in Fig. 1-3-2.
5. The DC-DC converter can be removed by removing the two screws Ⓑ securing the converter (see Fig. 1-3-3).
6. Remove the two screws Ⓒ and one screw Ⓓ securing the AF (auto focus) unit to remove it from the camera section.
   Note: At removal of the screw Ⓓ, make sure not to miss a washer between the AF unit and the camera section.
7. Disconnect the 2-pin and 6-pin connectors of the AF unit to separate it from the camera section.
8. When fitting the camera section with a new AF unit, first set the interlocking pin of the AF unit into the grooved rail on the focus ring and then tighten the two screws Ⓒ in front of the AF unit (see Fig. 1-3-3).

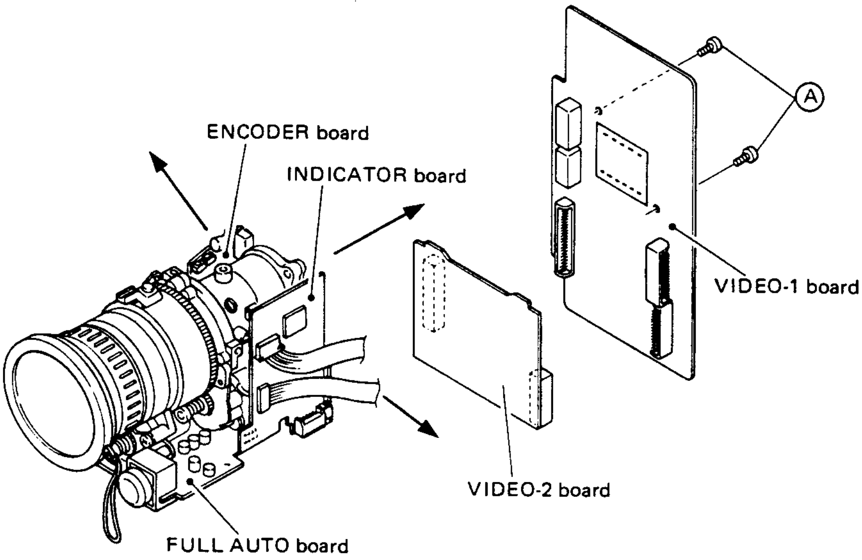

ENCODER board
INDICATOR board
Ⓐ
VIDEO-1 board
VIDEO-2 board
FULL AUTO board

Fig. 1-3-2

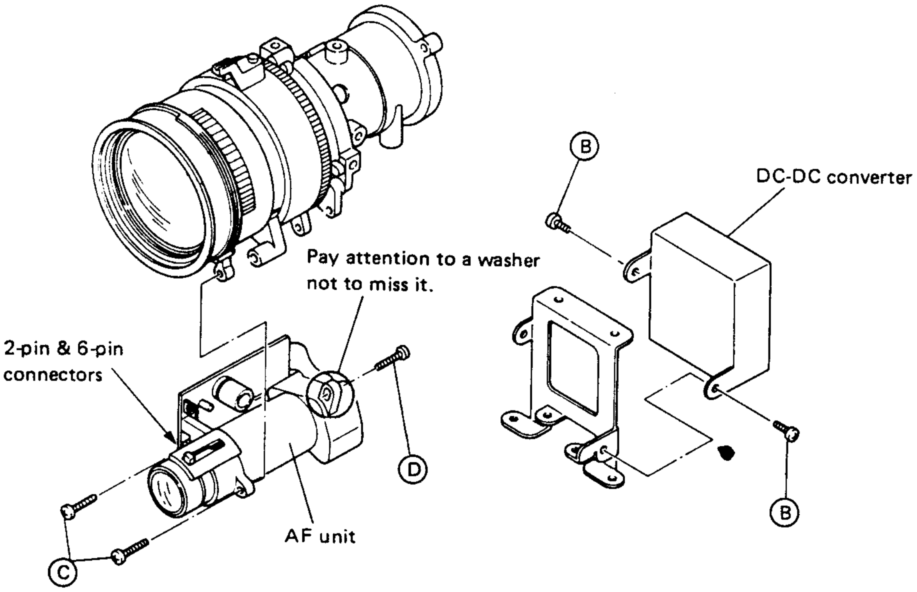

Ⓑ
DC-DC converter
Pay attention to a washer not to miss it.
2-pin & 6-pin connectors
Ⓓ
Ⓑ
AF unit
Ⓒ

Fig. 1-3-3

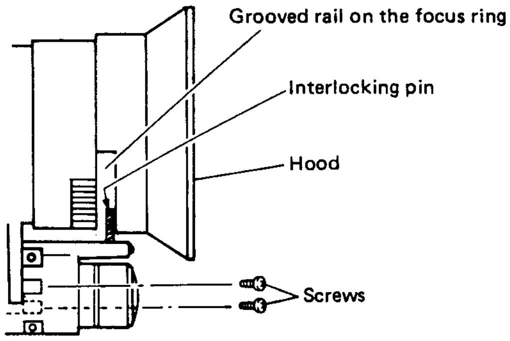
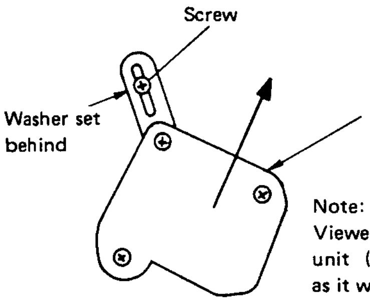


Fig. 1-3-4

9. Secure the AF unit with a screw Ⓓ (Fig. 1-3-3) from the back. At this time, make sure to set a washer between the optical block and the AF unit, and Ⓓ, holding the AF unit in the direction of the arrow mark tighten the screw locating it around the center of the AF unit's slider plate.



Note:
Viewed from the back of the AF unit (from VIDEO-1 board side as it was removed)

Fig. 1-3-5

10. After replacement, perform adjustments to be described below.

- **Adjustments**

Precautions

- After replacement of the AF unit, the following adjustment must be performed.
- Put away everything except the subject (especially clear around the optical section) since it is very delicate to adjust positioning of the AF unit.
- Before commencing the adjustment, confirm that back focus of the image pickup system has been correctly adjusted.

1. Set up a subject approx. 2 m distant from the lens.
2. Since the master lens for auto focus is located just under the image pickup lens, place the unit upside down so that the FULL AUTO board is positioned up.
3. Connect the CN6 of $\boxed{0}\boxed{2}$ Y/C board with the viewfinder and observe picture on the viewfinder screen.
4. Connect the CN410 of $\boxed{2}\boxed{4}$ INDICATOR board with the viewfinder, and confirm that indication patterns can be seen in the viewfinder.
5. Set the FOCUS switch to "AUTO" position, and turn the focus ring from 1.1 m to 5 m and vice versa repeatedly to check that picture is automatically in focus.

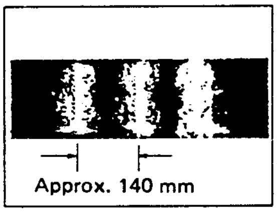
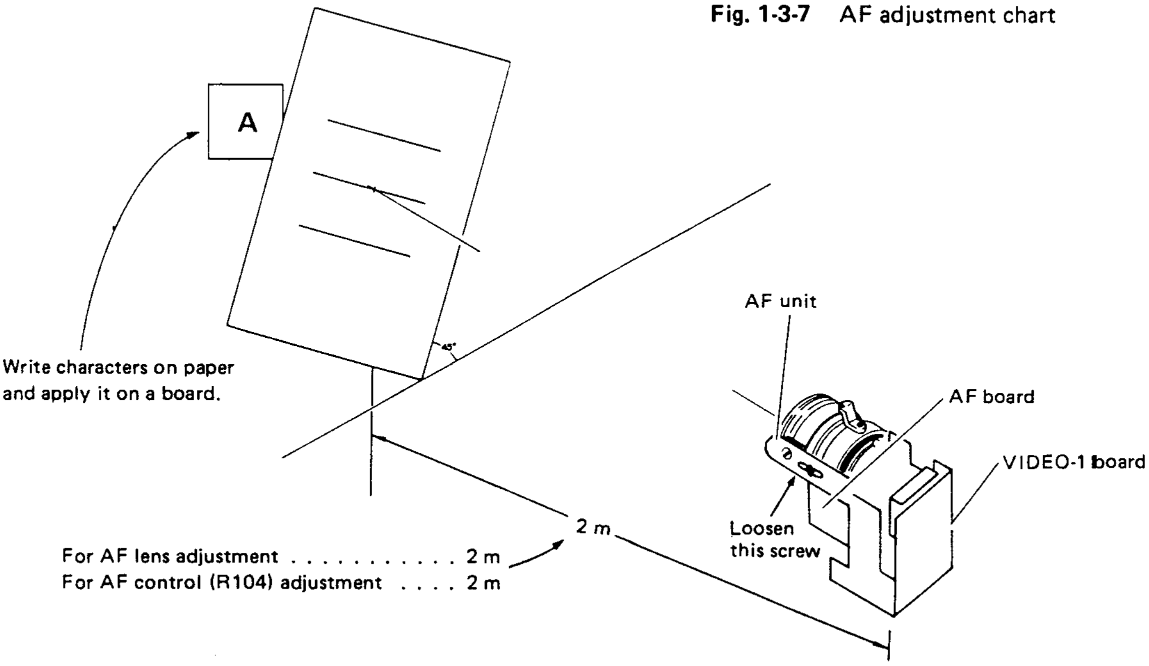


Fig. 1-3-7 AF adjustment chart



Write characters on paper and apply it on a board.

For AF lens adjustment . . . . 2 m
For AF control (R104) adjustment . . . . 2 m

Fig. 1-3-6 Setup for AF adjustment

6. Set the FOCUS switch to "MANUAL" position and attach the ND filter(s) which is used for back focus adjustment of the image pickup system to the lens.
7. In the above condition, confirm that the focus indication patterns ('focus in front', 'in focus', 'focus behind') are displayed in the viewfinder.

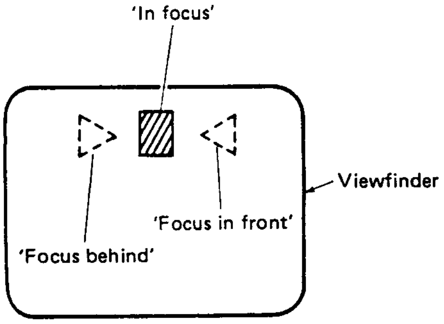

'In focus'
Viewfinder
'Focus in front'
'Focus behind'

Fig. 1-3-8

8. Observing the AF indication pattern in the viewfinder, adjust the master lens of the AF lens with an eccentric handle so that the lens brings the subject into focus – the indication pattern to show 'in focus' is located in the center of the viewfinder display.

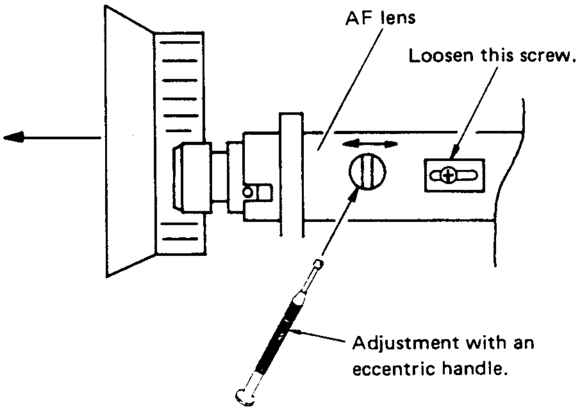

AF lens
Loosen this screw.
Adjustment with an eccentric handle.

Fig. 1-3-9

9. If the adjustment with an eccentric handle cannot be achieved, adjust VR104 so that the 'in focus' pattern is positioned in the center of the display.

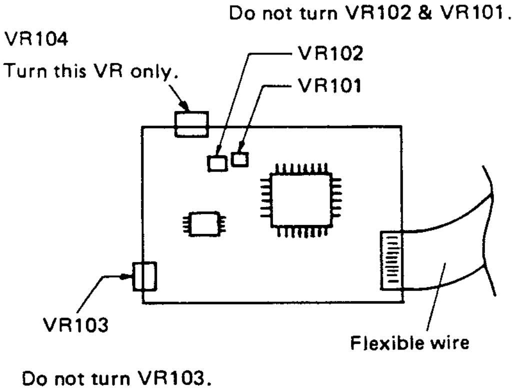

Do not turn VR102 & VR101.
VR104
Turn this VR only.
VR102
VR101
VR103
Flexible wire
Do not turn VR103.

Fig. 1-3-10

10. After the above adjustment is completed, set the FOCUS switch to "AUTO" and confirm that picture is in focus.

1.4 LOCATION OF MAIN BOARDS

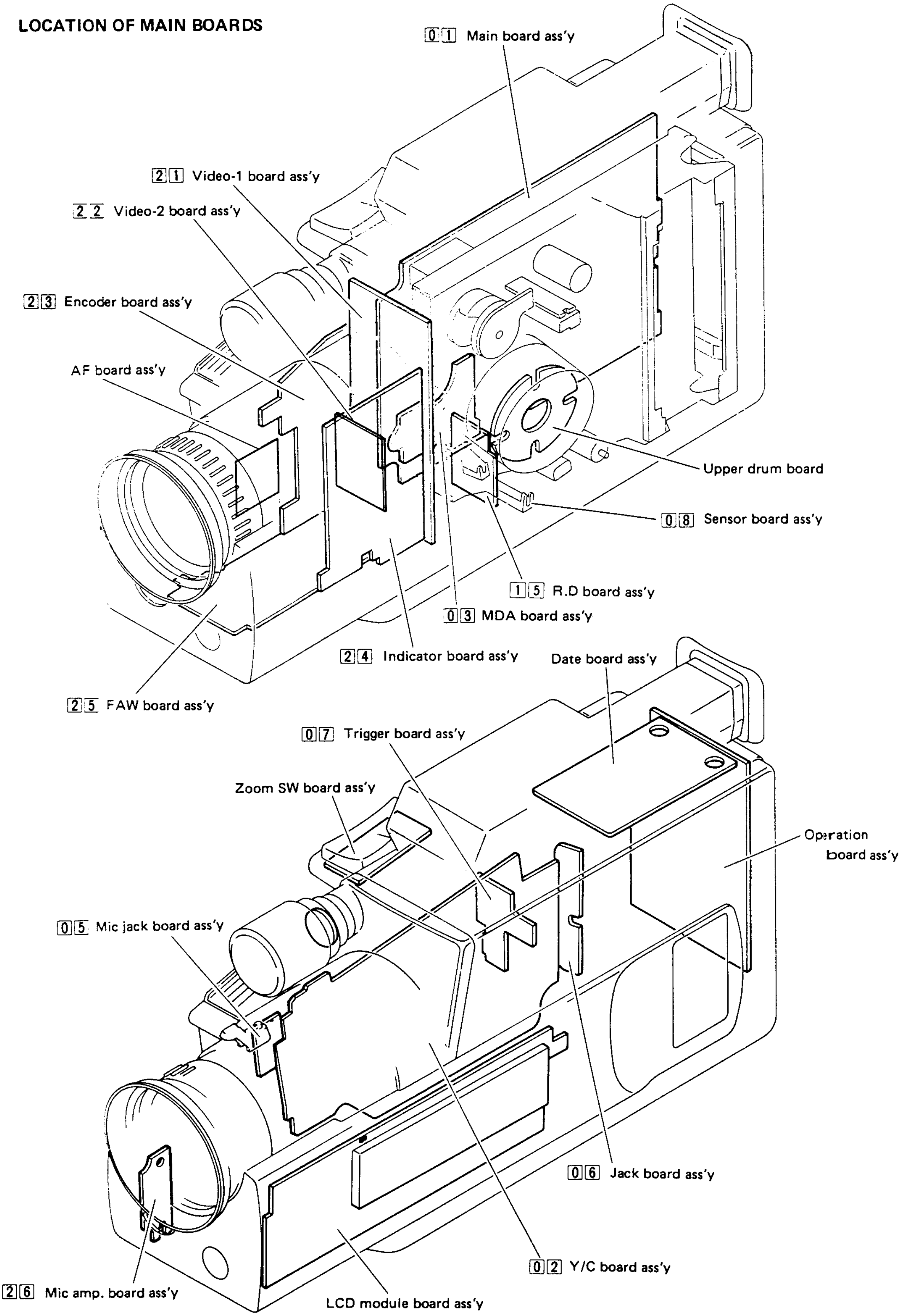

01 Main board ass'y
21 Video-1 board ass'y
22 Video-2 board ass'y
23 Encoder board ass'y
AF board ass'y
Upper drum board
08 Sensor board ass'y
15 R.D board ass'y
03 MDA board ass'y
24 Indicator board ass'y
Date board ass'y
25 FAW board ass'y
07 Trigger board ass'y
Zoom SW board ass'y
Operation board ass'y
05 Mic jack board ass'y
06 Jack board ass'y
02 Y/C board ass'y
26 Mic amp. board ass'y
LCD module board ass'y

Fig. 1-4-1

SECTION 2
MECHANICAL ADJUSTMENT

2.1 BEFORE PROCEEDING

1. This section describes procedures to replace mechanism parts which have aged and been worn as well as for parts replacement resulting from accidental troubles.
2. As most mechanical adjustments have close relation to electrical adjustments, pay enough attention to adjusting the mechanism in consideration of that it is the base of electrical adjustments.
3. If it needs to operate the mechanism without a cassette loaded, apply black tape to the end sensor of the deck section to shut off light and turn on the cassette switch. In this condition, keep the reel disk rotating not to enter the mechanism into unloading mode.
4. When operating the mechanism with the cassette housing removed, depress the cassette switch of the deck section. The cassette lid contacts the head drum. Either remove the lid or raise it to avoid contact.

2.2 REQUIRED JIGS AND TEST EQUIPMENT

1. To perform mechanical adjustment properly and easily, the following jigs and equipment are required for the exclusive use.
2. Besides the jigs and equipment for the exclusive use, the following measuring devices and general-purpose tools, etc. are necessary.
    - Color TV monitor
    - Hex. wrenches
    - Oscilloscope (wide band)
    - Precision screwdrivers
    - Cassette tape (for tape running test and recording)

Note: Tools and equipment for electrical adjustments, refer to the section 3.1.3.

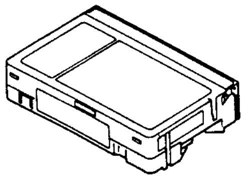
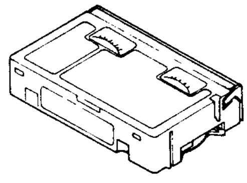
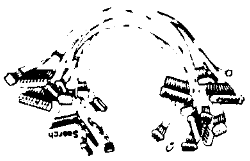
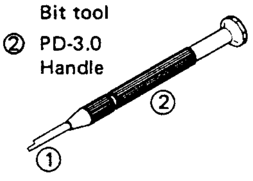
Alignment tape (for SP) MH-C4	Cassette torque meter PUJ50431-2	Patching cord YTU93001C	A/CTL head position tool ass'y YTU93002A
			① YTU93002-01 Bit tool ② PD-3.0 Handle 

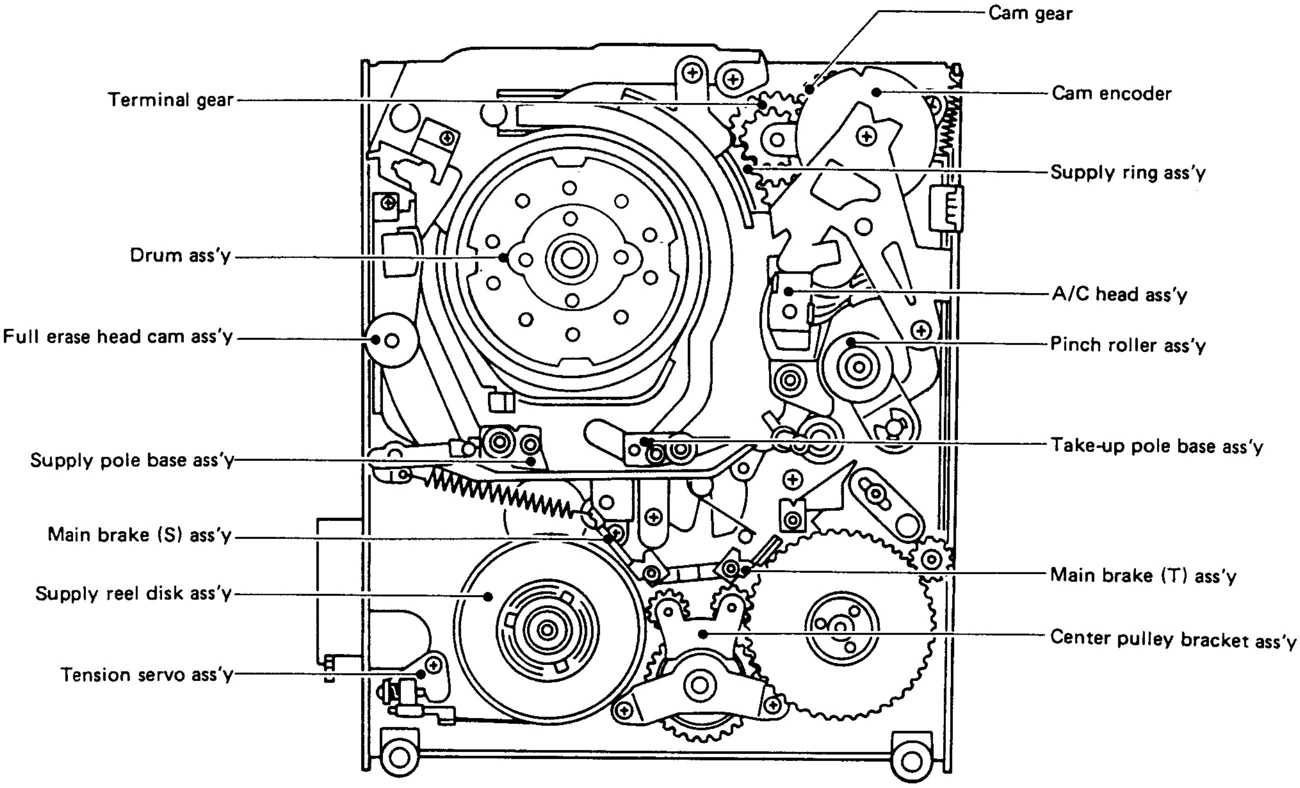
Table 2-2-1 Tools and equipment for mechanism adjustment

■ **Mode shift**

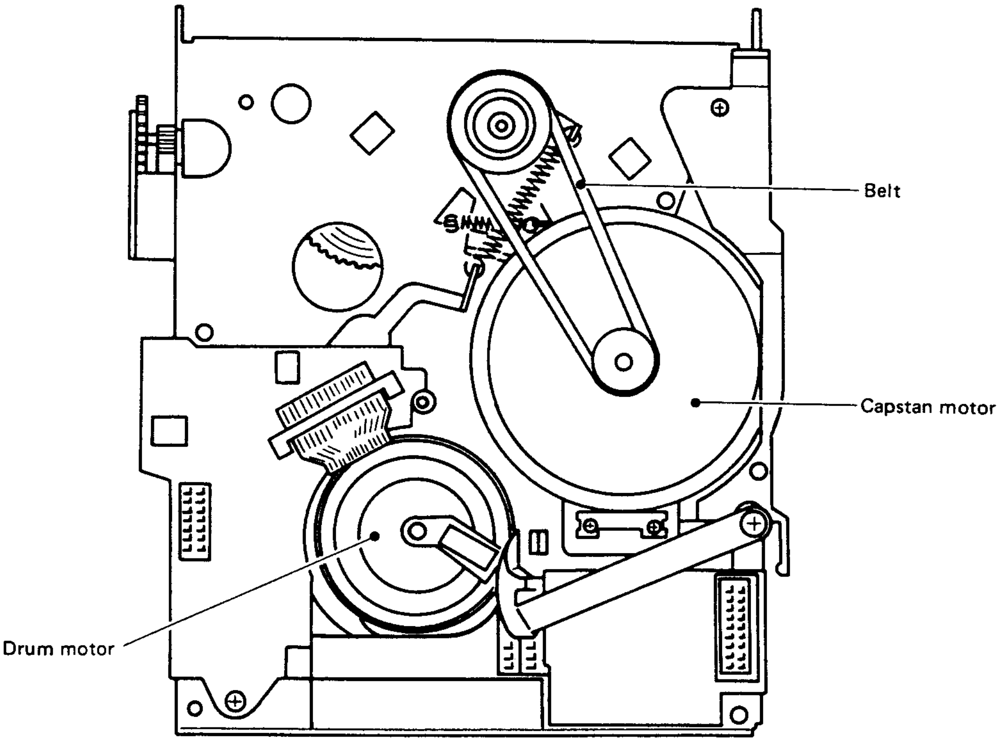
REW		FF		PAUSE — REC				REC					SEARCH										REC SAFE SW OPEN	CASSETTE SW OPEN	DEW.S ON	EMERGENCY	POWER OFF	Mode / SW
				QUICK REV	BACK SPACE	w/ Remocon	w/o Remocon	UNLOAD	LOAD	w/ Remocon	w/o Remocon		REW	FF	EDIT	STILL	UNLOAD	UNLOAD	LOAD	PLAY	REHEARSAL	STOP						
						CAM	CAM			CAM	CAM																	
○		○					○	○	○	○	○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	POWER
○		○					○	X	○	○	○		○	○	○	○	○	X	○	○	○	X	○		○			STOP
X		○						○					Search ◕	○		Search ◕	End ○	○	Ind. ◕	Search ◕	○	○	○		○			REW
○		X						○						Search ◕		Search ◕	Start ○	○	Ind. ◕	Search ◕	○	○	○		○			FF
○		○						○								○	○	○	○	○	○	○						REC
○		○						○	EXT ○							○	○	○	X	X	○	○	○					PLAY
															○	○			Pause ○	Pause ○			○					PAUSE
							○		CAM ○		○										Remote ○							C.TRIGGER
							X		Re mocon ○	○	X																	Remocon
								○									○	○			○	○	○		○			EJECT
						○	○									Preroll ○					Edit ○		Edit ○					QUICK REV / EDIT
						○	○	○	○	○	○		Auto	Auto	Auto		○	○		Auto	○	○	○		○			SP/LP
																					X	○	○		○			REHARSAL
○		○													○													Counter memory
5																												

○ : Mode shift operative X : No change in mode : No change in mode ◕ : Effective during SW pressed

2.3 LOCATION OF MAIN PARTS


Cam gear
Terminal gear
Cam encoder
Supply ring ass'y
Drum ass'y
A/C head ass'y
Full erase head cam ass'y
Pinch roller ass'y
Supply pole base ass'y
Take-up pole base ass'y
Main brake (S) ass'y
Main brake (T) ass'y
Supply reel disk ass'y
Center pulley bracket ass'y
Tension servo ass'y

Top view of deck


Belt
Capstan motor
Drum motor

Bottom view of deck

2.4 REPLACEMENT OF UPPER DRUM

1. Unsolder all soldered points of 10 relay pins on the relay board (see Fig. 2-4-1).

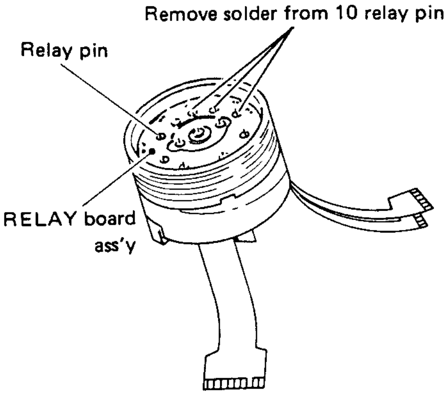

Remove solder from 10 relay pins.
Relay pin
RELAY board ass'y

Fig. 2-4-1 Upper drum assembly

2. Remove two screws from the upper drum.
3. To remove the upper drum, fit it out with a jig provided with a new upper drum and secure them to each other by tightening a screw provided with the jig and the two screws removed once from the drum as shown in Fig. 2-4-2(A).

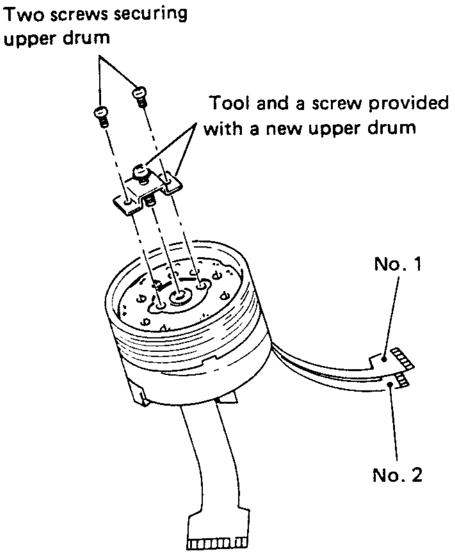

Two screws securing upper drum
Tool and a screw provided with a new upper drum
No. 1
No. 2

Fig. 2-4-2(A) Upper drum ass'y and replacing tool

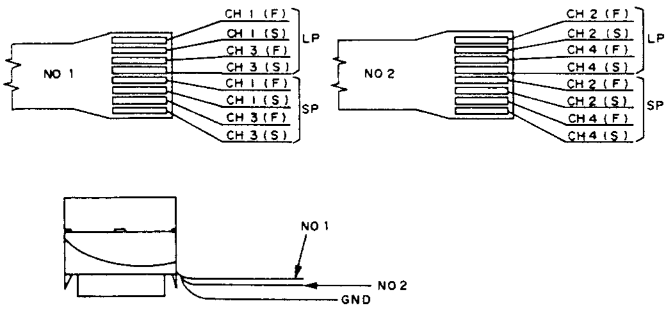

NO 1
CH 1 (F)
CH 1 (S)
CH 3 (F)
CH 3 (S)
LP
CH 1 (F)
CH 1 (S)
CH 3 (F)
CH 3 (S)
SP
NO 2
CH 2 (F)
CH 2 (S)
CH 4 (F)
CH 4 (S)
LP
CH 2 (F)
CH 2 (S)
CH 4 (F)
CH 4 (S)
SP
NO 1
NO 2
GND

Fig. 2-4-2(B) Upper drum ass'y and replacing jig

4. Before installing a new upper drum, insert a soldering iron (50 W) into the hole of the upper drum and heat it for 3–5 minutes to expand the upper drum. (See Fig. 2-4-3.)

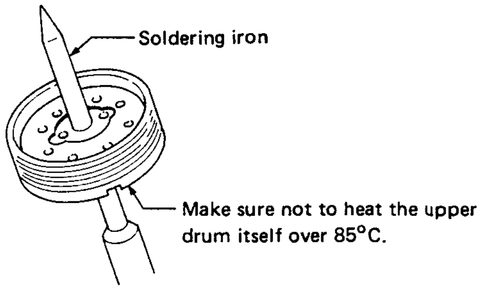

Soldering iron
Make sure not to heat the upper drum itself over 85°C.

Fig. 2-4-3 Upper drum

5. When fitting the lower drum with a new upper drum being expanded, set the lower drum as its three holes are in the form of inverse triangle as shown in Fig. 2-4-4.

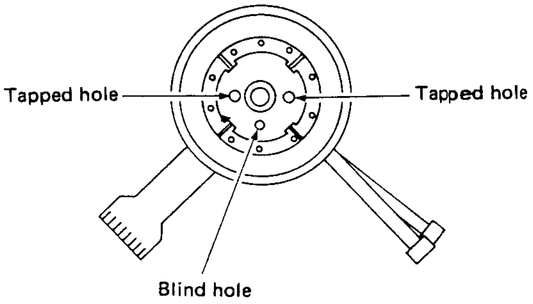

Tapped hole
Tapped hole
Blind hole

Fig. 2-4-4 Lower drum

6. Recognizing the upper drum head, fix the upper drum to the lower drum as the head pins' red wires make a right angle with the lower drum's blind hole.

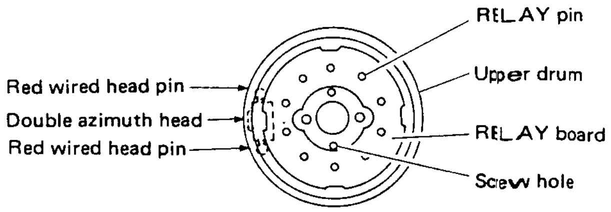

RELAY pin
Upper drum
Red wired head pin
Double azimuth head
Red wired head pin
RELAY board
Screw hole

Fig. 2-4-5 Upper drum assembly

2.5 CHECK AND ADJUSTMENT

Before replacing or removing the following parts, make sure to confirm their positions particularly in relation to others for a reference of re-assembling.

2.5.1 Phase adjustment of cam gears and loading rings

When removing or replacing take-up and supply loading rings, make sure to set the loading ring's position for the Stop mode beforehand (see Fig. 2-5-1).

1. Remove the worm gear (inside the loading motor bracket assembly) in advance, turn the take-up/supply loading ring in the unloading direction.
2. Adjust positions of the take-up and supply loading rings so that their hole and V-shaped notch are located in a straight line to the triangle mark of the main deck (viewed from the top, see Fig. 2-5-1[a]).

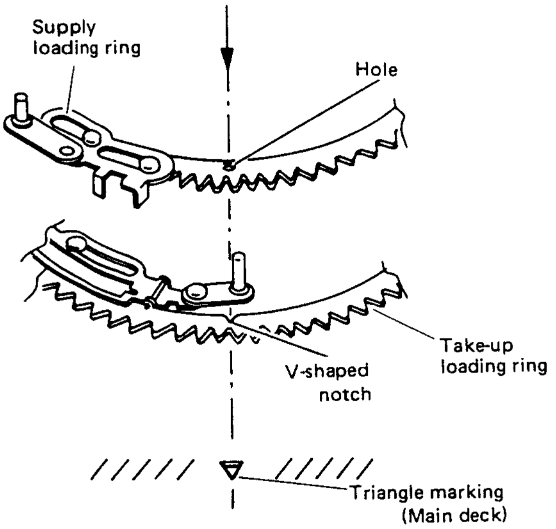

Supply
loading ring
Hole
Take-up
loading ring
V-shaped
notch
Triangle marking
(Main deck)

Fig. 2-5-1 (a) Phase adjustment of loading rings

During phase adjustment of the loading ring, keep the eject lever located on the rear of the deck depressed downward (in the direction of the reel). See Fig. 2-5-1(b). If the eject lever is off the above-mentioned position, it does not work for ejection.

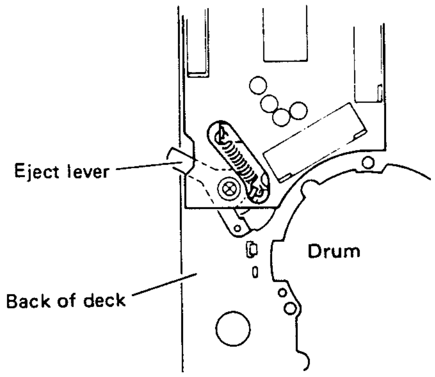

Eject lever
Drum
Back of deck

Fig. 2-5-1 (b) Phase adjustment of eject lever

3. As stated in the above item 2, two loading rings should be correctly positioned before re-assembly. In regard with this work, it is recommended to attach one of three ring guides (the nearest one to the take-up side or to the A/C head) to the two loading rings to make the work easy.
4. To enter the mechanism into the Stop mode, position the control cam gear's marking and the center of the terminal gear's axis as shown in Fig. 2-5-2.

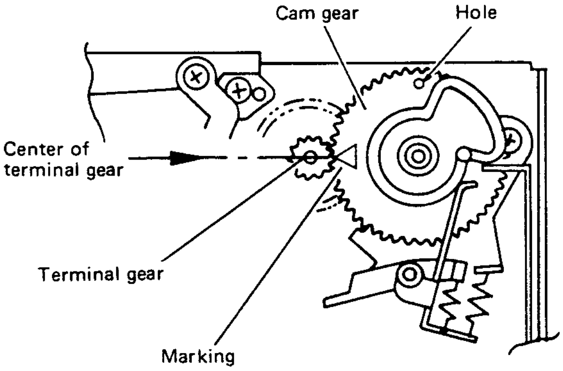

Cam gear
Hole
Center of
terminal gear
Terminal gear
Marking

Fig. 2-5-2 Phase adjustment of control cam

2.5.2 Mode control switch

1. In the Stop mode, the mode control switch is set in the phase shown in Fig. 2-5-3.

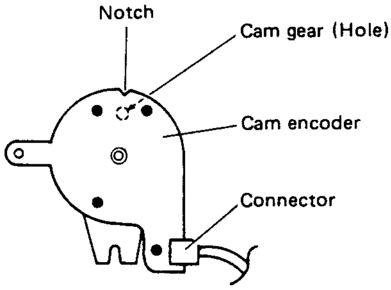

Notch
Cam gear (Hole)
Cam encoder
Connector

Fig. 2-5-3 Phase adjustment of mode control switch

2.5.3 Middle pole

1. In the Stop mode, relative position of the middle pole and the arm gear is as shown in Fig. 2-5-4.

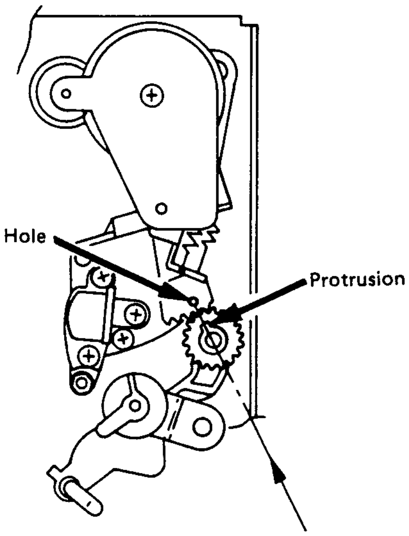


Fig. 2-5-4 Phase adjustment of middle pole

2.5.4 Checkup of tension pole position and back tension adjustment

Load the mechanism with a cassette and set it for the playback mode. Then, confirm that centers of the tension pole assembly and the impedance roller are in a straight line to the front of the deck (in the direction of the cassette housing). See Fig. 2-5-5.

Note: Torque can be adjusted by turning the torque adjustment screw 1 (Fig. 2-5-5), namely, torque increases by turning it clockwise while decreases by counterclockwise turning.

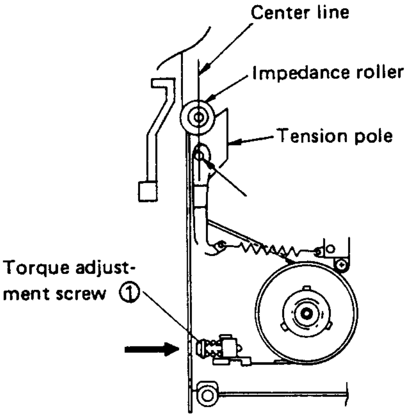


Fig. 2-5-5 Phase adjustment of tension pole

2.6 CHECK AND ADJUSTMENT OF TAPE TRANSPORT SYSTEM

Note: Generally, the tape transport system does not require any adjustment since it has been precisely adjusted at the factory.
However, this adjustment is needed when parts of the tape transport system were replaced as a result of a long-time use or any trouble in the system.

2.6.1 Guide rollers

1. Guide roller height adjustment is required in order to attain FM waveform linearity at the drum input and output sides in the procedure of the interchangeability adjustment.
2. With a cassette tape (except alignment tapes) running, adjust the height of the supply guide roller with a hex. wrench (1.4 mm) so that the tape runs smoothly along the drum lead at the drum entrance side.
3. For the drum exit side, adjust the take-up guide roller height in the same manner as above.

2.6.2 Impedance roller

Note: In principle, any adjustment of the impedance roller should not be done since the impedance roller has the reference height of the supply side and the nut securing it is not for adjustment but just for fixing.

1. For a reference, relative position between the main deck and the impedance roller is shown in Fig. 2-6-1.
This is a reference height of the supply side (for the tape entrance, etc.).

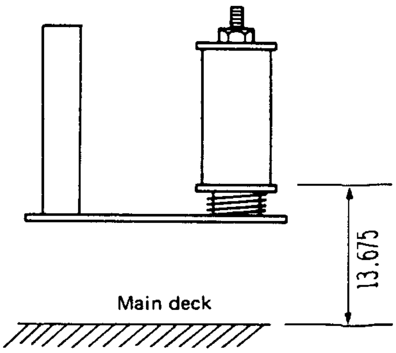


Fig. 2-6-1 Impedance roller height

2.6.3 Audio/control (A/CTL) head
(located by the take-up guide pole)

Note: Adjustment of audio/control head is given much weight in the interchangeability adjustment.

1. After completion of the take-up guide roller adjustment, adjust the A/CTL head's inclination so that the tape runs smoothly along the flange of the take-up guide pole. This adjustment can be performed by turning the screw ② with a precision screwdriver (cross-head,⊕). See Fig. 2-6-2.
2. By way of an example of the adjustment, turn the screw 2 counterclockwise to wrinkle the running tape around the bottom of the take-up guide pole, and then slowly turn the screw clockwise until no wrinkles are not found in the tape.
3. Next, proceed to adjustments of its azimuth and height.

Note: There is no place for adjustment of the take-up guide pole since it has been precisely adjusted as a reference height of the take-up side (tape outlet side).

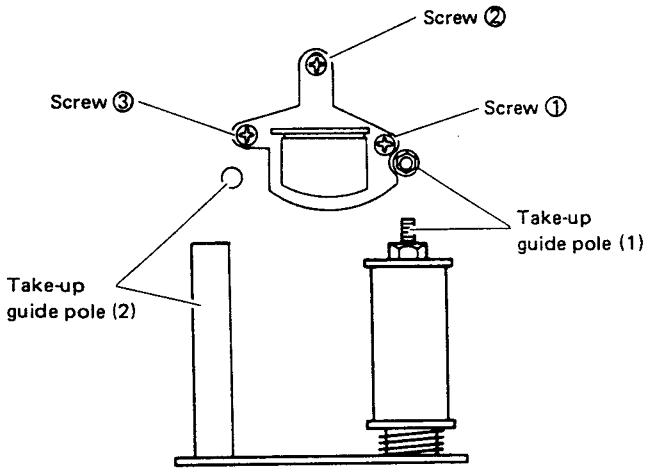


Fig. 2-6-2 A/CTL head adjustment

2.7 CHECK AND ADJUSTMENT OF INTERCHANGEABILITY

Note: Before using an expensive alignment tape for the interchangeability adjustment, it is recommended to use an ordinary cassette tape to check up no trouble in tape running. If there is any trouble in the tape running, find the cause and remedy it first.

2.7.1 FM waveform

For checking and adjusting FM waveforms, use the alignment tape MH-C4 and stairstep signals.

1. Play back the alignment tape MH-C4 and adjust the tracking control to obtain the maximum FM waveform. At this time, confirm that the waveform is the standard video FM waveform as shown in Fig. 2-7-1, namely, [a] (maximum output), [b] (minimum output at the center of waveform), [c] (minimum output at the drum intake – input portion), and [d] (minimum output at the drum outlet – output portion) are in the relationship shown below.

   $\frac{b}{a} \geqq 0.8$ $\frac{c}{a} \geqq 0.7$ $\frac{d}{a} \geqq 0.7$

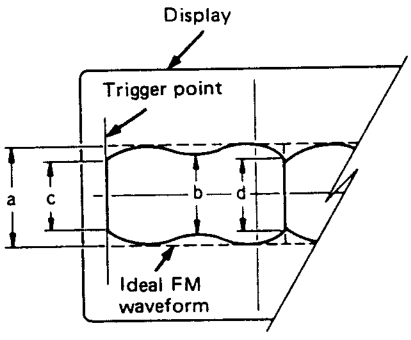


Fig. 2-7-1 FM waveform (standard video FM waveform)

2. If the waveform does not satisfy the standard conditions or it is far from linear (parallel) variation, re-adjustment is needed. If the waveform is far from the parallel shape, it causes a partial level drop owing to a slight tracking error, which may result in noise occurrence.
3. Turn the tracking control to vary the FM waveform from maximum to minimum, and vice versa, and confirm that the FM waveform varies rather parallel at the drum intake (input) side.
   If FM waveform irregularly changes, for example, expanded portion becomes narrow or narrowed portion expands, it is because of incorrect height of the supply guide roller (incorrect tape running along the drum lead at the drum intake). Such being the case, adjustment of the supply guide roller height is very important for correct and smooth tape running and to obtain satisfactory FM waveform variation of rather parallel lines. (See Fig. 2-7-2.)

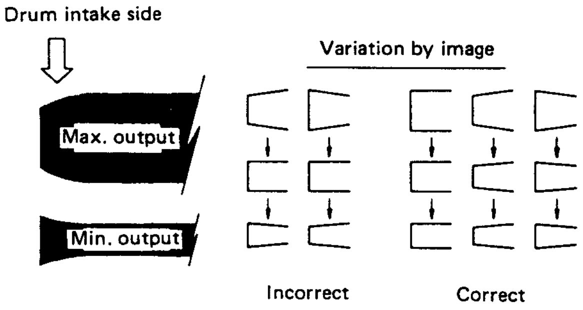


Fig. 2-7-2 FM waveform variation at drum intake

4. In the same manner as above, check up FM waveform variation between maximum and minimum outputs whether they are nearly in parallel lines or not. If not, adjust the take-up guide roller height (tape outlet side). See Fig. 2-7-3.
5. Next, perform fine adjustments of the take-up and supply guide roller heights for entire FM waveform variation between maximum and minimum outputs by the tracking control operation so that every variation shows parallel and linear lines.
6. After completion of the height adjustments for the take-up and supply guide rollers, confirm that there is no wrinkle nor damage in the tape around the impedance roller and take-up guide pole. If such the symptom is found around the supply impedance roller which functions as the lower limiter of the tape, fine adjust the roller's position slightly downwards. This adjustment must be done only for the supply impedance roller.

   On the other hand, if such the symptom is seen around the take-up guide pole, adjustment should be performed not for the take-up guide pole but for the A/CTL head by adjusting its inclination (for correct tape contact) to travel the tape correctly along the flange on the bottom of the guide pole.

   After confirmation of normal tape running, check up entire FM waveform again.

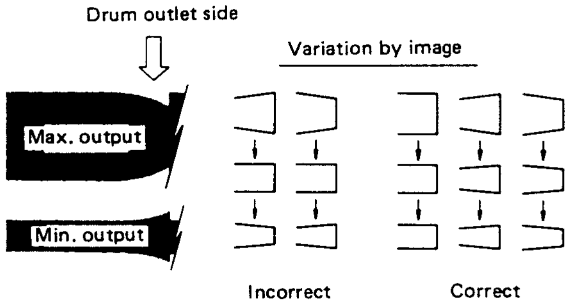


Fig. 2-7-3 FM waveform variation at drum outlet side

2.7.2 A/CTL (audio/control) head adjustment

Incorrect positioning of the A/CTL head causes reduced audio output when a tape is played back by another video deck, deterioration in S/N, and in a severe case, interference in servo stability due to inability to pick up control signals. To observe audio signals connect an oscilloscope to the audio output terminal.

1. Play back the stairstep segment (7 kHz audio signal) of the alignment tape MH-C4.
2. Adjust the A/CTL head height by turning screws Ⓐ, Ⓑ and Ⓒ precisely and evenly.

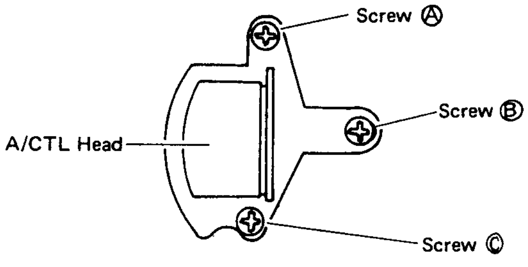


Fig. 2-7-4

3. Turn the screw Ⓐ to obtain the maximum audio output.
4. Turn the screws Ⓐ , Ⓒ and Ⓑ evenly little by little in the same direction to change height of the A/CTL head, and settle it for the maximum audio output.
output.

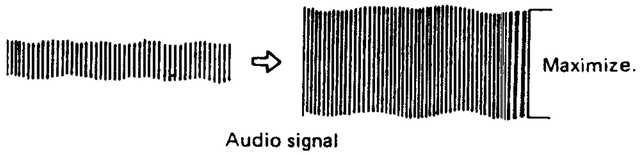


Fig. 2-7-5 A/CTL head adjustment

2.7.3 Control head phase (X value) adjustment

If the phase (X value) of the control head is coming off, it causes timelag between playback picture and voice. This symptom remarkably appears in the LP mode comparing with the standard mode.
For this adjustment, set the tracking control at the center detent (AUTO) position.

1. Connect an oscilloscope to TP109 (TP FM) of the MAIN board (SERVO) and observe the waveform.
2. Play back the stairstep signals of the alignment tape MH-C4.
3. Slightly loosen screws Ⓓ and Ⓔ of the A/CTL head and set the tip of the A/CTL head positioning jig in the groove and guide hole respectively. Then, pull the A/CTL head fully in the direction of the capstan. (See Fig. 2-7-6.)
4. Moving the A/CTL head in the reverse direction of the above step 2, observe variation of CH-1 FM waveform and stop moving the head at the first point where the output becomes maximum. Then, tighten the screws Ⓓ and Ⓔ.

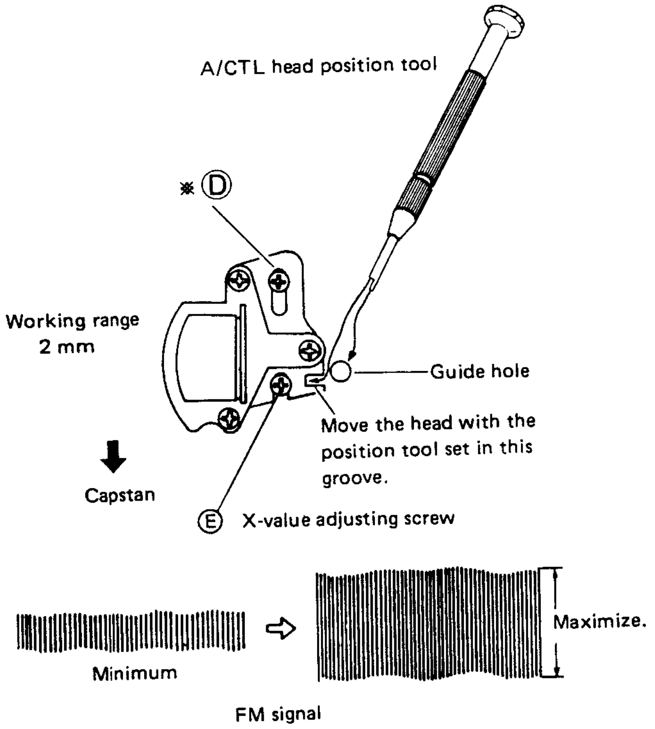

A/CTL head position tool
※Ⓓ
Working range
2 mm
Capstan
Guide hole
Move the head with the position tool set in this groove.
Ⓔ X-value adjusting screw
Minimum
Maximize.
FM signal

Fig. 2-7-6 X-value adjustment

2.7.4 Final check

1. Confirm that the FM waveform recorded by the subject deck satisfies the standard of video FM waveform shown in Fig. 2-7-1. At the same time, also confirm that the switching point does not come off.

SECTION 3
ELECTRICAL ADJUSTMENTS

3.1 DECK SECTION

3.1.1 Precautions

Electrical adjustments are generally necessitated after replacing worn mechanical parts or video heads because of interrelationship between those parts and various electrical circuits.

In the event of malfunction with electrical circuits, troubleshooting with the aid of proper test instruments must be done first, and then, commence necessary repair, replacement, and adjustment, etc.

For adjustment of electrical circuits equipped with trimming resistors, replace those necessary for the adjustment with variable resistors only in the servicing period.

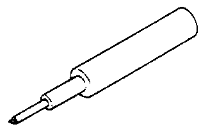
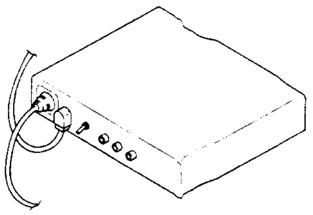
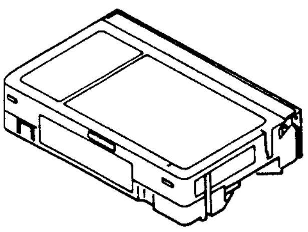
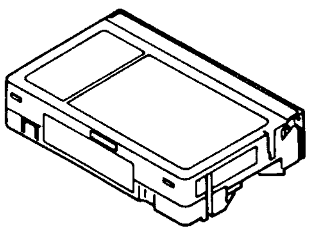
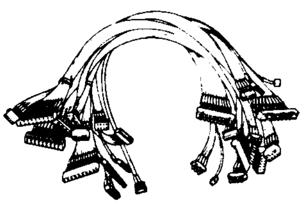
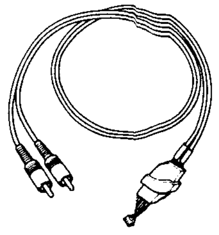
At field service without a complete range of test instruments, avoid unnecessary disturbance of the internal control settings. For satisfactory repair and adjustment, send back the unit to the factory or to the nearest authorized service center.

3.1.2 Adjustment procedures and terms used in this section

No.	Order of adjustment and checkup
Item	Name of adjustment and checkup
Check point . . .	Point(s) to be connected with test instruments
Adjustment parts:	Parts such as variable resistors, trimmer capacitors, etc. to be adjusted.
Mode & signal .	External input signal and mode necessary for adjustment
Color bars:	Input color bars signal
Stairstep:	Input stairstep signal
1 kHz:	Input 1 kHz audio signal
MH-C4 color bars:	Color bars signal of MH-C4 alignment tape to be played back
MH-C4 stairstep:	Stairstep signal of the same
MH-C4 3 kHz:	3 kHz audio signal of the same
MH-C4 1 kHz:	1 kHz audio signal of the same
MH-C4 RF sweep:	RF sweep signal of the same
CH-C5L color bars:	Color bars signal of CH-C5L alignment tape to be played back
STOP:	Stop mode with the power turned on
REC:	Recording mode
PB:	Playback mode
REC → (other mode):	Record on a blank tape which will be used in other mode(s)
PAUSE/STILL:	Still playback mode
SHUTTLE SEARCH:	Shuttle search (normal and reverse) playback mode
DUBBING:	dubbing mode
EJECT:	Ejection of loaded cassette
Description . . .	Method of checkup and adjustment, waveform, notice, etc.

3.1.3 Required test equipment

1. Color monitor TV
2. Oscilloscope
3. Video cassetter for checkup
4. Frequency counter
5. Audio tester
6. Regulated DC power supply
7. Digital voltmeter
8. Blank tape (EC-30) for recording and playback
9. Standard electrical service tools, etc.

		Adjustment jig for compact VTR YTU93004	Y/C separator PUJ25579-2
			
Alignment tape (MH-C4)	Check tape (LP mode) (CH-C5L)	Patch cord YTU93001C	Y/C separator tool YTU9306
			

3.1.4 External supply of video signals

- **Connection of Y/C separator**

See Fig. 3-1-1.

Connect the Y/C separator's DC OUT cable to DC IN of the GR-45S deck and supply 9.6 V DC to the separator's DC IN terminal from AA-V5S, etc.

Next, connect the red terminal of the attached cable to C OUT of the Y/C separator while the white terminal to Y OUT, and connect the cord of a signal (color bars) generator to VIDEO IN of the Y/C separator.

In the state that the signal generator is supplying color bars signal to every connected circuit, perform adjustments according to the adjustment procedures (for REGULATOR, SERVO, Y/C and AUDIO boards) herein described.

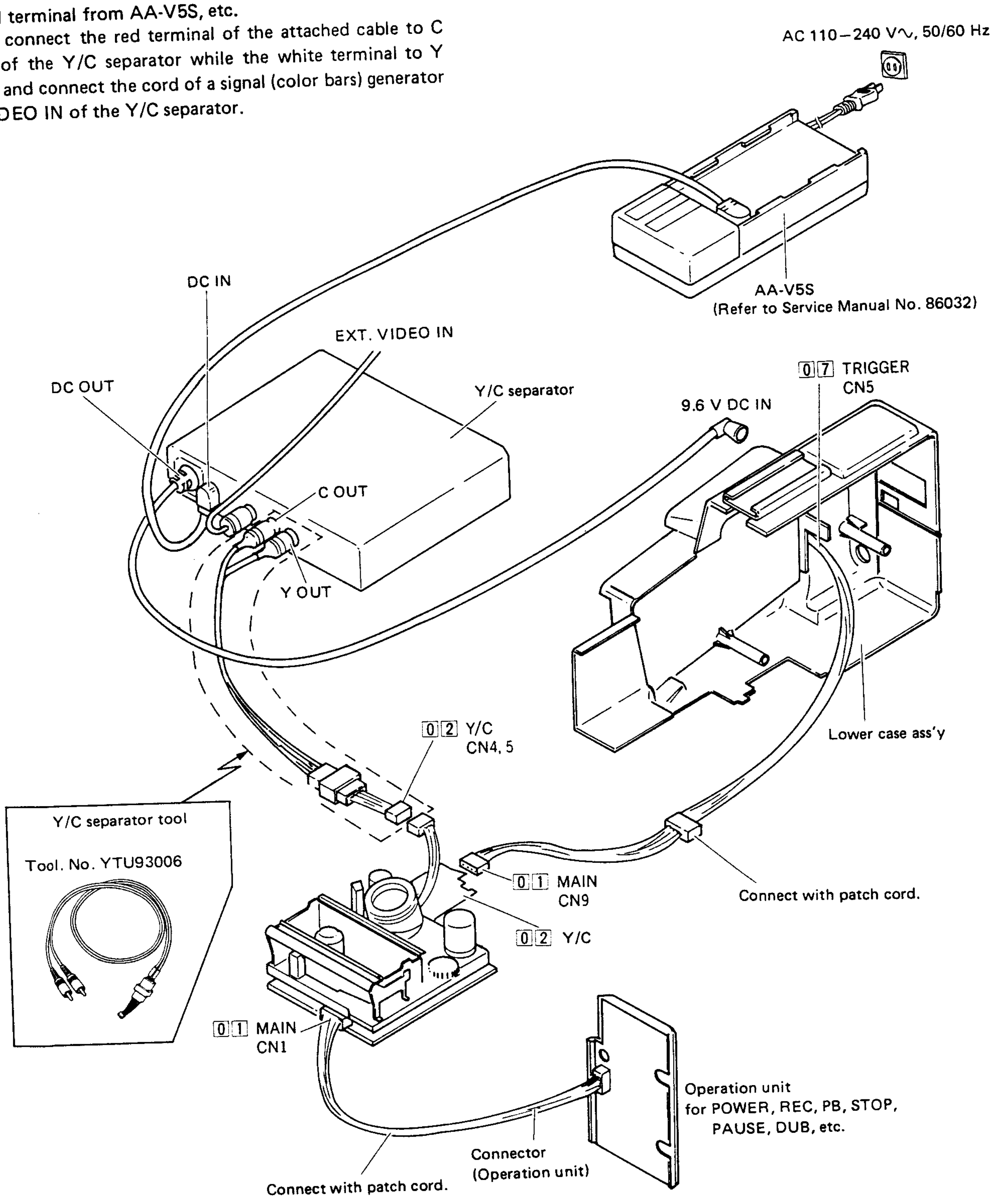

AC 110−240 V∿, 50/60 Hz
AA-V5S
(Refer to Service Manual No. 86032)
DC IN
EXT. VIDEO IN
DC OUT
Y/C separator
C OUT
Y OUT
9.6 V DC IN
07 TRIGGER
CN5
Lower case ass'y
02 Y/C
CN4, 5
Y/C separator tool
Tool. No. YTU93006
01 MAIN
CN9
Connect with patch cord.
02 Y/C
01 MAIN
CN1
Operation unit
for POWER, REC, PB, STOP, PAUSE, DUB, etc.
Connector
(Operation unit)
Connect with patch cord.

Fig. 3-1-1

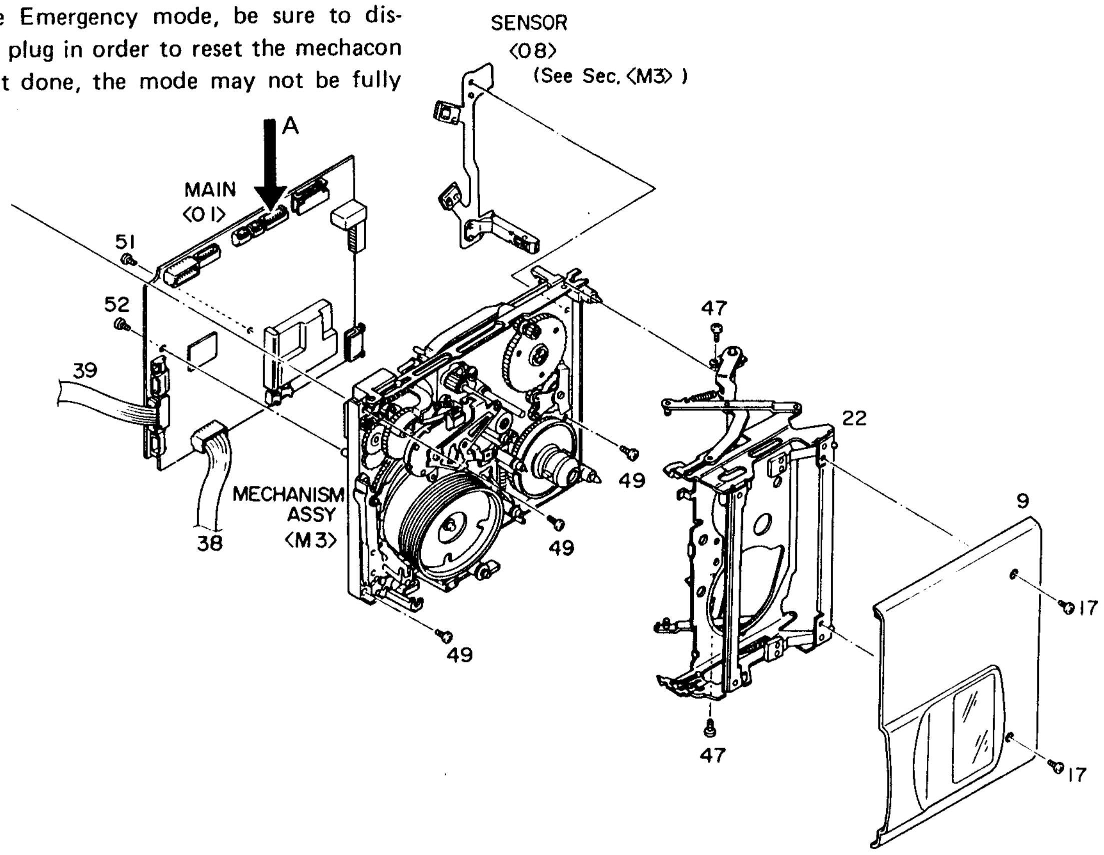
3.1.5 Emergency mode

1. Emergency mode table

No.	DISPLAY FRASH	CONTAINS	OBSERVE MODE	SHIFTED MODE
0	▶▶	PB CTL pulse input absent	During Zero Frame Editing	STOP
1	◀◀			
2	▶ ▶▶	Drum flipflop input absent	Drum rotates, Zero Frame Editing	STOP
3	▶ ◀◀	Reel sensor input absent	PB, REC, S FF	STOP
4	❚❚	REG 5 V level abnormal	All modes	MAINTENANCE
5	▶ ❚❚	Loading motor rotates for more than 10 seconds without shift to next mode.	LOADING, UNLOADING	MAINTENANCE
6	—	Emergency input (H) at EMG pin	All modes	Power OFF

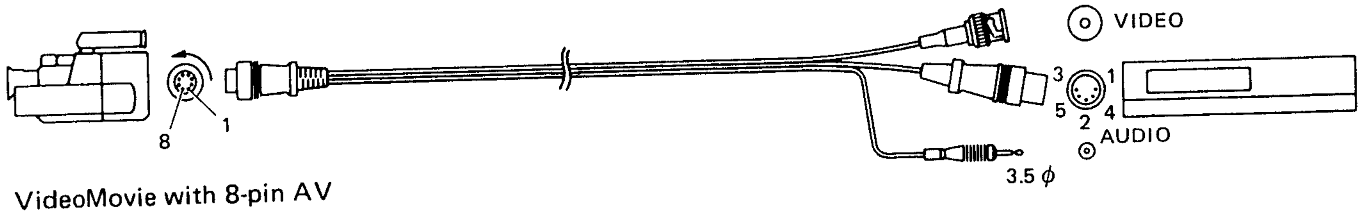
Emergency mode : Indication for 5 minutes, then power OFF (power not turned OFF when using AC adapter)
Port states : Same as Stop mode
Effective key : POWER
Shifted mode : Power OFF
No. 6 : Emergency shut off can be used for short test, etc.
Emergency input is "H" and EMG terminal.
Power OFF in all modes and all I/O are initialized.

2. To release the Emergency mode to perform repair, short pins 2 (TEST 1) and 3 (TEST 2) of the MAIN board CN-15 (indicated by arrow A in figure) to pin 1 (GND). This will release the Emergency mode.
When releasing the Emergency mode, be sure to disconnect the power plug in order to reset the mechacon CPU. If this is not done, the mode may not be fully released.



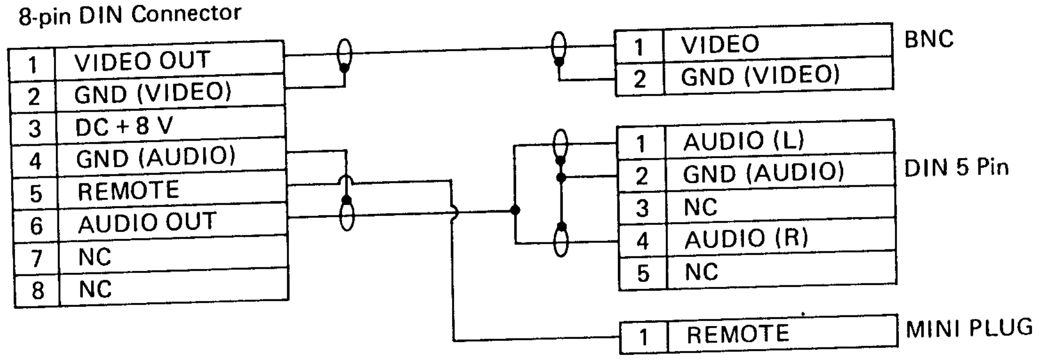
3.1.6 Appearance and connection of cables

- VC-V856E AV DUBBING CABLE (2.5 m, optional)


VIDEO
8
1
3
1
5
2
4
AUDIO
3.5 φ

VideoMovie with 8-pin AV output connector

VCR with BNC connector and 5-pin DIN Connector



8-pin DIN Connector

1	VIDEO OUT
2	GND (VIDEO)
3	DC + 8 V
4	GND (AUDIO)
5	REMOTE
6	AUDIO OUT
7	NC
8	NC

BNC

1	VIDEO
2	GND (VIDEO)

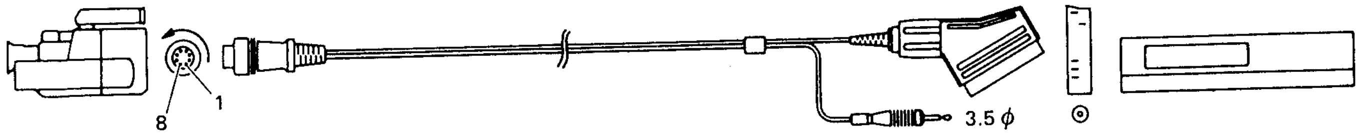
DIN 5 Pin

1	AUDIO (L)
2	GND (AUDIO)
3	NC
4	AUDIO (R)
5	NC

MINI PLUG

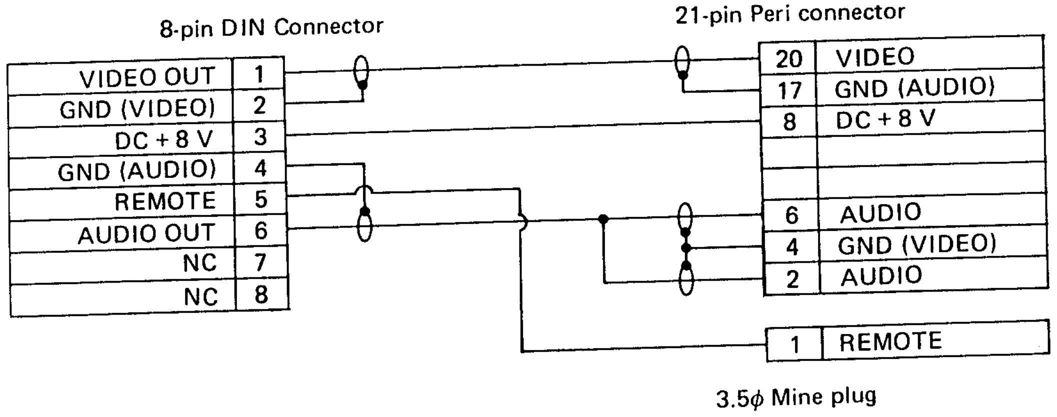
1	REMOTE

- VC-V896E AV DUBBING CABLE (2.5 m, provided)



VideoMovie with 8-pin AV output connector

VCR with AV input socket (21-pin Peri connector)



8-pin DIN Connector

VIDEO OUT	1
GND (VIDEO)	2
DC + 8 V	3
GND (AUDIO)	4
REMOTE	5
AUDIO OUT	6
NC	7
NC	8

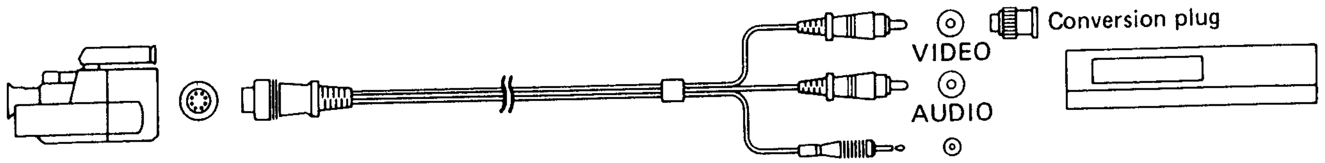
21-pin Peri connector

20	VIDEO
17	GND (AUDIO)
8	DC + 8 V
6	AUDIO
4	GND (VIDEO)
2	AUDIO

1	REMOTE

3.5φ Mine plug

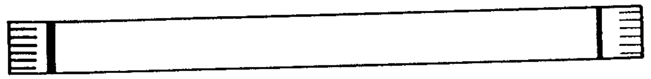
- VC-V826E AV OUTPUT CABLE (2.5 m, optional)


Conversion plug
VIDEO
AUDIO

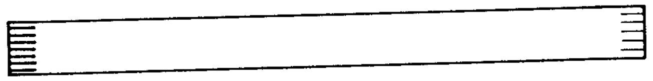
VideoMovie with 8-pin AV output connector

VCR or TV/monitor with RCA (or BNC) AV input connectors

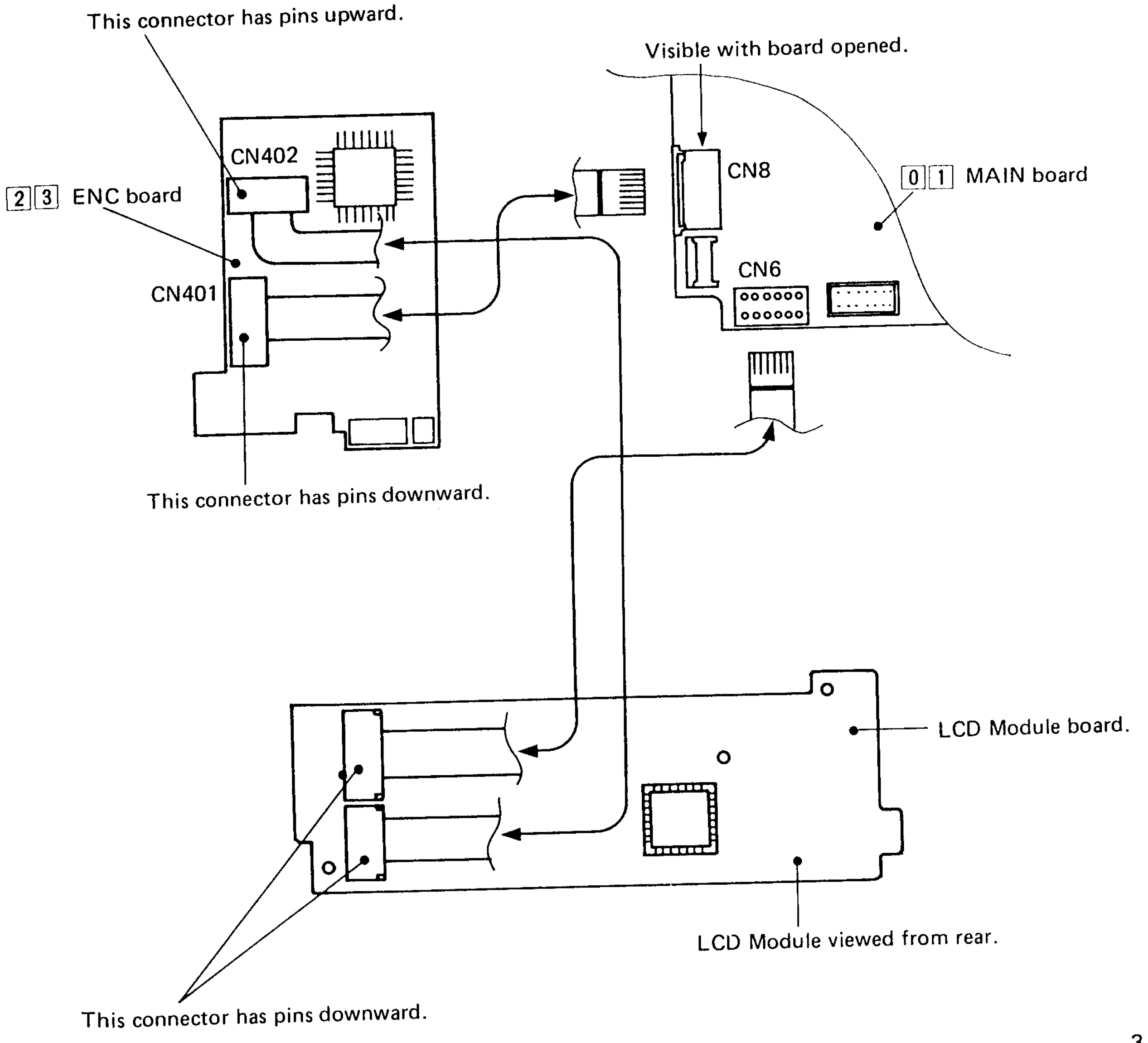
- By engaging the flat cableconnector of the YTU93001C patch cord, since the electrical polarity becomes reversed, be sure to perform as follows.



Blue marked side is front.

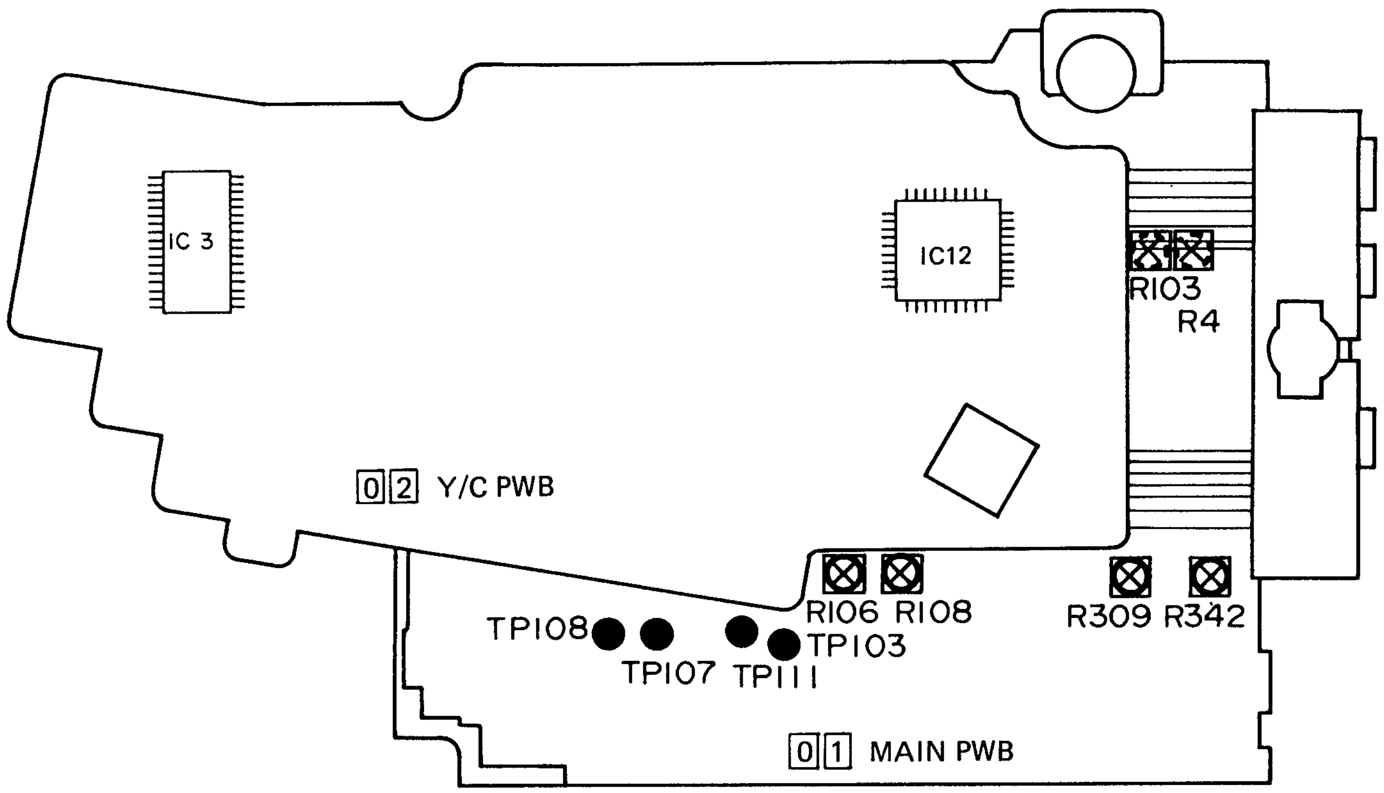


Unmarked side is conductor. When inserting connector, perform in this manner.


This connector has pins upward.
Visible with board opened.
CN402
CN8
2 3 ENC board
0 1 MAIN board
CN6
CN401
This connector has pins downward.
LCD Module board.
LCD Module viewed from rear.
This connector has pins downward.

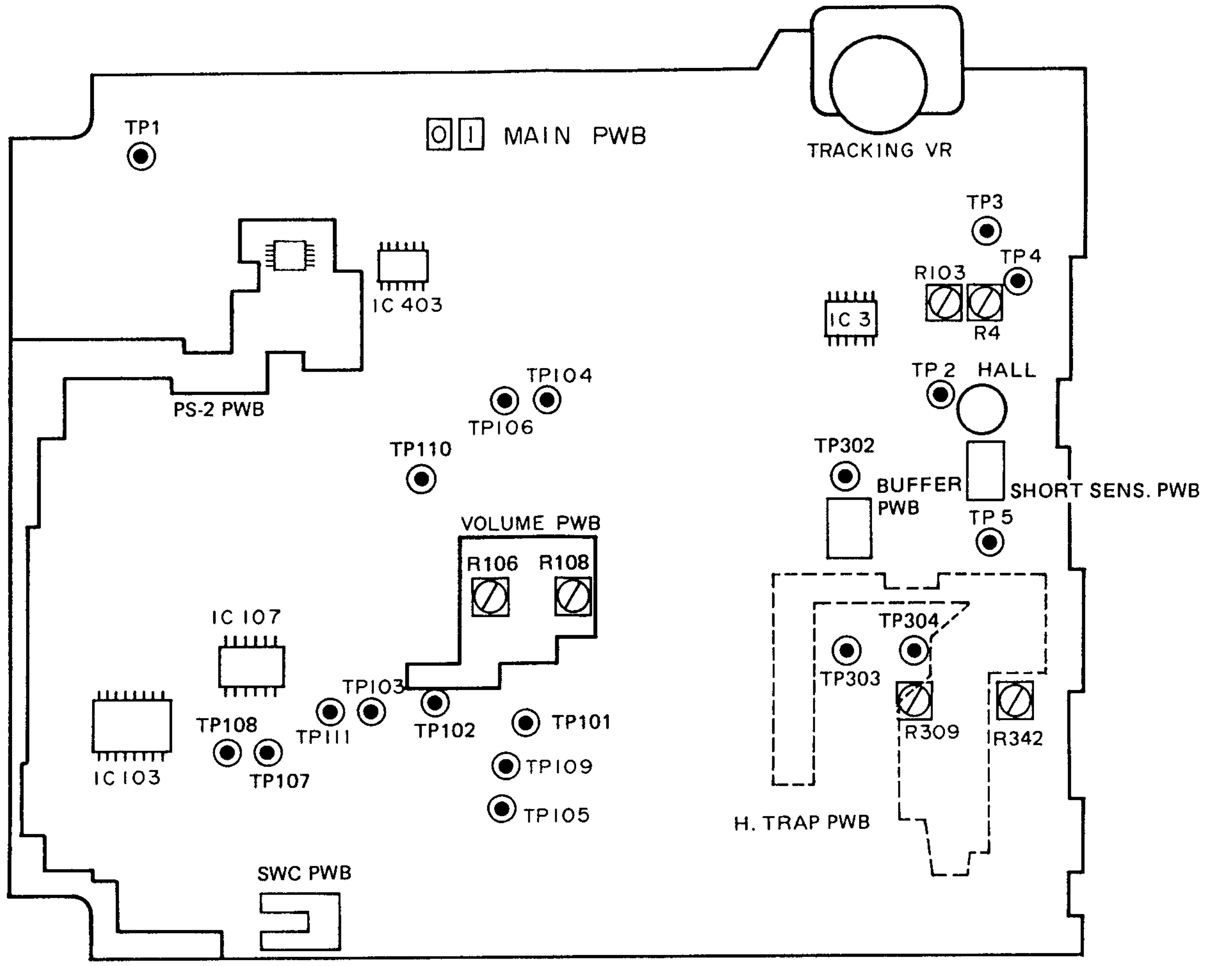
3. 1. 7 VR and TEST POINT

– Y/C and Main –

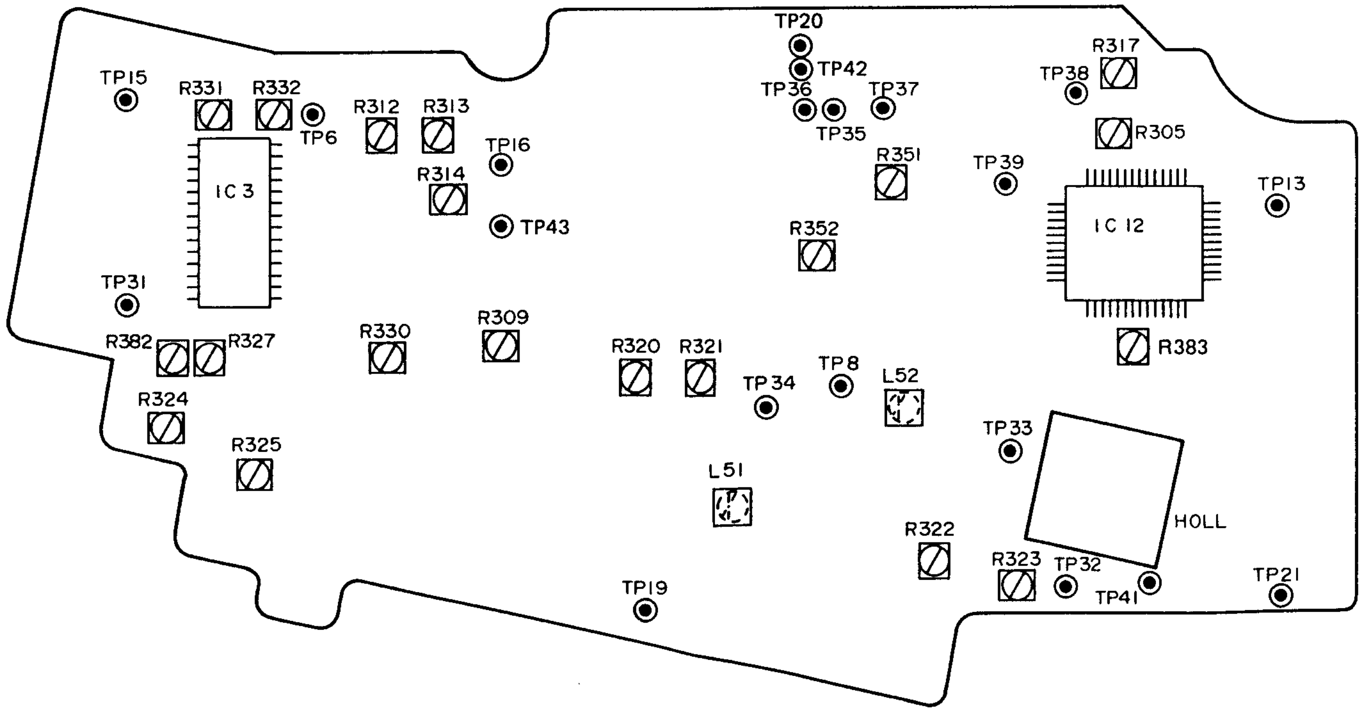

IC 3
IC12
RI03
R4
02 Y/C PWB
RI06 RI08
R309 R342
TPI08
TPI07
TPI11
TPI03
01 MAIN PWB

NOTE: FOR THIS ADJUSTMENT, ITIS POSSIBLE WITH Y/C PWB ASS'Y.

– MAIN –


TP1
01 MAIN PWB
TRACKING VR
TP3
R103
TP4
R4
IC 3
IC 403
PS-2 PWB
TP104
TP106
TP110
TP2
HALL
TP302
BUFFER PWB
SHORT SENS. PWB
TP5
VOLUME PWB
R106
R108
IC 107
TP304
TP303
TP103
TP108
TP111
TP102
TP101
TP107
TP109
TP105
IC103
R309
R342
H. TRAP PWB
SWC PWB

– Y/C –

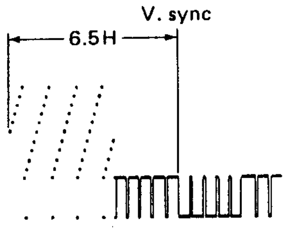
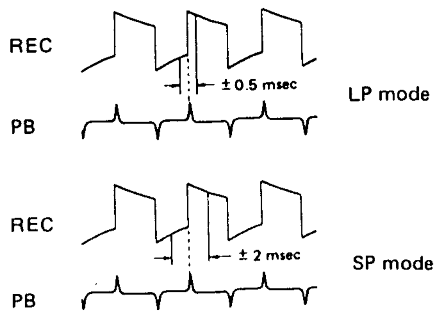

TP20
TP42
TP36
TP37
TP35
R317
TP38
R305
TP15
R331
R332
TP6
R312
R313
TP16
R314
TP43
R351
TP39
TP13
IC 3
IC 12
R352
TP31
R382
R327
R330
R309
R320
R321
TP34
TP8
L52
R383
R324
R325
TP33
L51
HOLL
R322
R323
TP32
TP41
TP19
TP21

- **For properly and correctly proceeding all the electrical adjustments described in this section, connect the Y/C separator to the Y/C board and supply color bars signal from the signal generator. (Refer to Section 3.1.4.)**

3.2 SWITCHING REGULATOR CIRCUIT ($\boxed{0}\boxed{1}$ MAIN board)

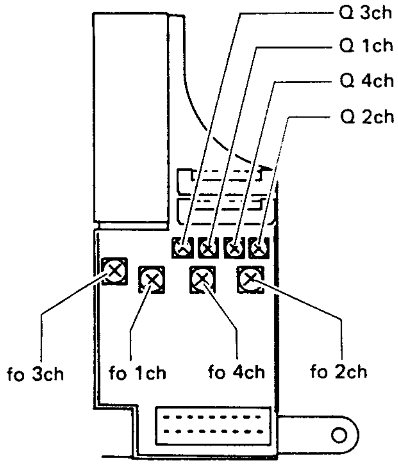
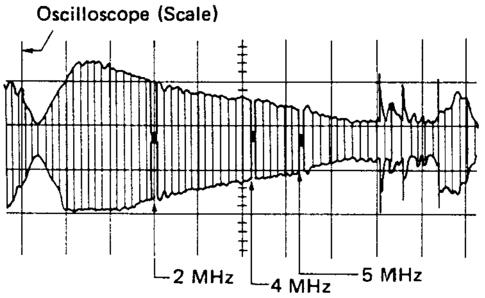
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	REG 8 V	• REC without input signal	TP3 (REG 8 V) $\boxed{0}\boxed{1}$ MAIN	R4 $\boxed{0}\boxed{1}$ (REGULATOR)	1) Connect a digital voltmeter between TP3 and TP5, and adjust R4 to obtain 8 V switching power.

3.3 SERVO CIRCUIT ($\boxed{0}\boxed{1}$ MAIN board)

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	PB Switching Point	• MH-C4 PB • Stairstep (–) trigger	TP13 (VIDEO OUT) $\boxed{0}\boxed{2}$ Y/C TP111 (DRUM FF) Ext. trigger $\boxed{0}\boxed{1}$ MAIN	R108 (PB CTL PULSE) $\boxed{0}\boxed{1}$ MAIN	1) Connect the oscilloscope to TP13 and TP111 which is for external trigger, and play back the alignment tape MH-C4. 2) Set the oscilloscope for external triggering with minus (–) slope signal. 3) Adjust R108 so that the trigger point becomes 6.5H before V. sync.  Fig. 3-3-1
2	LP/SP Tracking Preset	• Stairstep • REC then PB • Tracking VR set at center detent position • LP mode and SP mode	TP108 (PB CTL PULSE) $\boxed{0}\boxed{1}$ MAIN TP111 (DRUM FF) Ext. trigger $\boxed{0}\boxed{1}$ MAIN	R103 (TRACKING PRESET) $\boxed{0}\boxed{1}$ MAIN	1) Connect an oscilloscope to TP108 and TP111 which is for external triggering, and set the mode for REC to record signals (LP mode). 2) Observe the leading point of waveform at TP108. 3) Play back the signal recorded in the above step 1), and adjust R103 so that relationship between rise-up point of TP108 waveform in REC and its positive pulse in PB becomes 0 ± 0.5 msec. 4) Perform the same procedures in 2) and 3) above in SP mode, and confirm the same relationship (TP108 waveforms in REC and PB) is 0 ± 2 msec.  REC ± 0.5 msec LP mode PB REC ± 2 msec SP mode PB Fig. 3-3-2

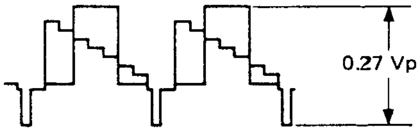
3.4 PREAMP CIRCUIT BOARD

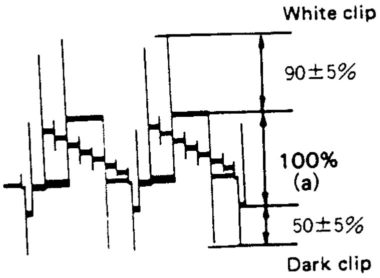
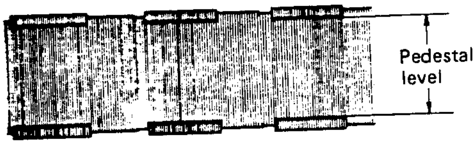
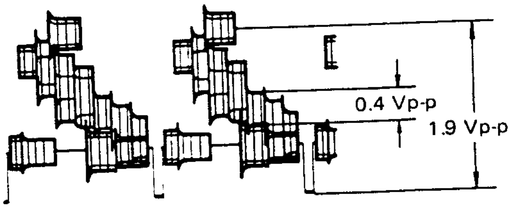
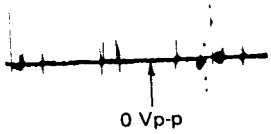
Note: Unless otherwise specified, all test points and adjustment parts are located on the PREAMP board.

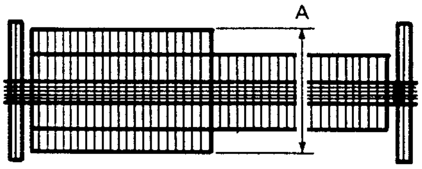
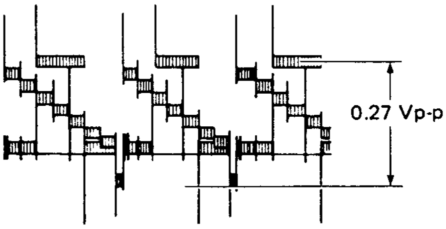
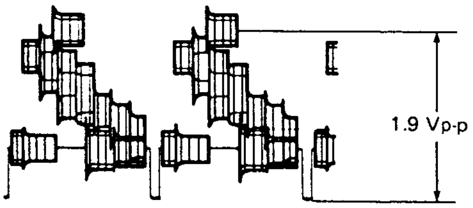
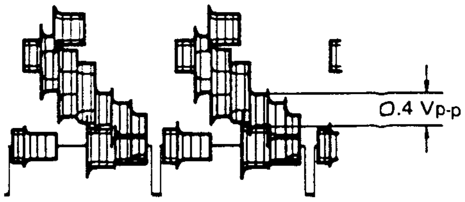
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	fo/Q Adj.	• Perform this adjustment only if image reversal ("tearing") or horizontal jitter occurs during REC/PB of scenes with strong light/dark contrast after replacing the heads or preamp. • Remove the MAIN boards from the mechanism chassis, When using patchcords for adjustment, groun the MAIN boards to the mechanism chassis.			
		• MH-C4 PB • RF sweep  Q 3ch Q 1ch Q 4ch Q 2ch fo 3ch fo 1ch fo 4ch fo 2ch **Fig. 3-4-1** Pre-amplifier adjustments location	TP109 (PB FM) 01 MAIN (SERVO)	CH-1: C2 (fo), R2 (Q) CH-2: C4 (fo), R4 (Q) CH-3: C1 (fo), R1 (Q) CH-4: C3 (fo), R3 (Q) PREAMP	1) Remove Y/C and MAIN boards. Connect these boards with patchcords. Remove the upper cover of the preamp shield case. 2) Connector PREAMP and MAIN boards. Confirm video signal. 3) Connect oscilloscope to TP109 (PB FM) of the MAIN (Servo) board. 4) Observe the TP109 FM waveform and turn CH1 to CH4 clockwise to adjust for maximum 4.8 MHz region. 5) Observe the oscilloscope scale graduations. When the 2 MHz region is 2.5 scale divisions, adjust Q of CH1 to CH4 for 1 scale division.  2 MHz : 4.8 MHz = 2.5 : 1.5 **Fig. 3-4-2**

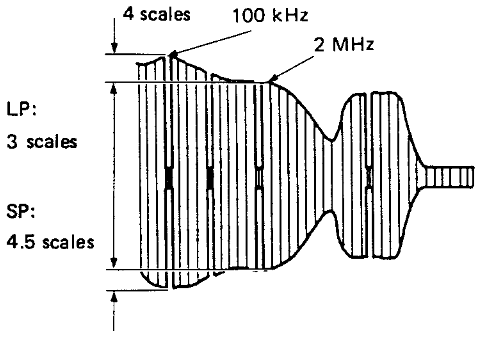
3.5 Y/C CIRCUIT (02 Y/C board)

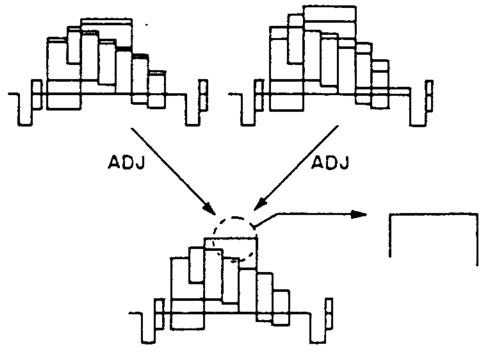
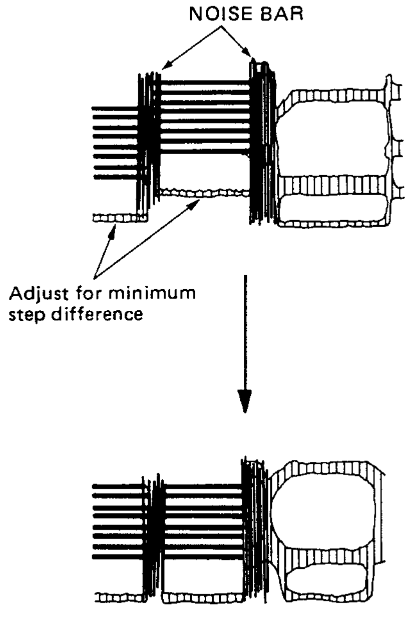
Note: Unless otherwise specified, all test points and adjustment parts are located on the Y/C board.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	AGC Level	• E-E • Color bars • Y/C separator	TP15 (VIDEO Y LEVEL)	R314 (E-E Y LEVEL)	1) Connect the oscilloscope to TP15. 2) Adjust R314 to obtain 0.27 Vp-p for Y level.  **Fig. 3-5-1**
2	Carrier Deviation	• REC • No input signal	IC2 pin㉘	R331 (CARRIER)	1) Connect the frequency counter to pin 28 of IC2. 2) In recording without input signal, adjust R331 so that frequency at pin 28 of IC2 (counter display) becomes 3.8 MHz± 50 kHz.
		• REC mode • Color bars • Y/C separator	IC2 pin㉓	R332 (DEVIATION)	3) In recording color bar signal, adjust R332 so that frequency at pin 23 of IC2 becomes 24 mVp-p. 4) Record and play back the color bar signal. Connect the oscilloscope to TP13. 5) During recording, adjust R332, and then play back so that the Y level becomes 2.0 Vp-p.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
3	White & Dark Clip	• E-E • Color bars • Y/C separator	TP6 (EMPHASIS)	R313 (WHITE CLIP) R312 (DARK CLIP)	1) With the oscilloscope connected to TP6, adjust R313 and R312 so that white clip becomes 90 ± 5% and dark clip becomes 50 ± 5%, respectively.  Fig. 3-5-2
4	REC FM Level	• REC • Color bars • Y/C separator	Test pin of pre-amplifier PRE AMP (Can be measured from the outside of the shield.)	R382 (REC FM LEVEL) for SP R327 (REC FM LEVEL) for LP	1) Connect the oscilloscope's probe to the test pin of the preamp. 2) Adjust R382, then REC so that the signal level becomes 3.0 Vp-p at where the waveform comes to pedestal level. (SP mode) 3) Adjust R327, then REC so that the signal level becomes 2.2 Vp-p at where the waveform comes to pedestal level. (LP mode)  Fig. 3-5-3
5	E-E Level	• E-E • Color bars • Y/C separator	TP13 (VIDEO OUT) TP13 (VIDEO OUT)	R305 (E-E Y LEVEL) R323 (E-E COLOR LEVEL)	1) Connect the oscilloscope to TP13. 2) Adjust R305 so that Y level at TP13 becomes 1.9 Vp-p. 3) Adjust R323 so that magenta level at TP13 becomes 0.4 Vp-p.  Fig. 3-5-4
6	Video Noise Cancel	• MH-C4 PB • Color bars	TP31 (NOISE CANCEL)	R330 (VIDEO NOISE CANCEL)	1) Connect a jump wire between TP31 and TP19. 2) Adjust R330 so that signal level at TP31 becomes minimum.  Fig. 3-5-5

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
7	REC Color Level	• MH-C4 PB • Color bars	TP8 (PB COLOR IN)	–	1) Connect the oscilloscope to TP8. 2) Measure maximum level at TP8. (Make a note of this level as "A".)
		• REC then PB • Color bars • Y/C separator	TP8 (PB COLOR IN)	R321 (REC COLOR LEVEL for SP) R320 (REC COLOR LEVEL for LP)	3) In REC mode, adjust R321 so that the maximum level from CH-1 to CH-4 is 130% of "A". (SP mode) 4) Next, in LP mode, adjust R320 so that the maximum level from CH-1 to CH-4 is 150% of "A".  Fig. 3-5-6
8	PB Y Level	• REC then PB • Color bars • Y/C separator	TP15 (VIDEO Y LEVEL) TP13 (VIDEO OUT)  Fig. 3-5-7	R309 (PB DEM LEVEL) R317 (PB Y LEVEL)	1) With the oscilloscope connected to TP15, adjust R309 to obtain 0.27 Vp-p for Y level. 2) Connect the oscilloscope to TP13. 3) Adjust R317 so that signal level becomes 1.9 Vp-p.  Fig. 3-5-8
9	Bell Characteristic				
(1)	4.3 MHz Bell	• MH-C4 PB • Color bars	TP32 (PB COLOR OUT)	L51 (4.3 BELL)	1) Adjust L51 to where the magenta level is the same for a 2H period at TP32.
(2)	1.1 MHz Bell	• E-E • Color bars	TP34 (REC COLOR OUT)	L52 (1.1 BELL)	2) Adjust L52 to where the magenta level is the same for a 2H period at TP34.
10	PB Color Level	• REC then PB • Color bars • Y/C separator	TP13 (VIDEO OUT)	R322 (PB COLOR LEVEL)	1) Connect the oscilloscope to TP13. 2) Adjust R322 to obtain 0.4 Vp-p for magenta level.  Fig. 3-5-9

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
11 (1)	Video EQ	• REC then PB • Color bars • Y/C separator	TP13 (VIDEO OUT)	R324 (RF EQ) R325 (RF EQ)	1) Connect a jump wire between TP20 and TP33. 2) In SP mode, adjust the oscilloscope to set the sweep signal start point to 4 scale divisions. Then adjust R324 to set 2 MHz to 4.5 scale divisions. 3) Next, record and play back in the LP mode. Adjust R325 to set 2 MHz to 3 scale divisions. 4) Confirm channel frequency response difference within 2 dB. Also confirm FM output channel difference within 3 dB at TP109 of the MAIN board.  4 scales 100 kHz 2 MHz LP: 3 scales SP: 4.5 scales **Fig. 3-5-10**
11 (2)	Video EQ	**When a color sweep generator is not in hand.** • REC then PB • LP mode • Y/C separator	Monitor TV	R325 (RF EQ)	1) Pick up a human subject or skintone chart, and while observing display on a monitor-TV, adjust R325 for optimum frequency response and S/N. **Note:** Frequency response and S/N are inversely related. Raising the frequency response too high impairs S/N, and vice versa. Set R325 to the optimum position for both parameters.

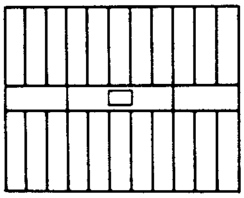
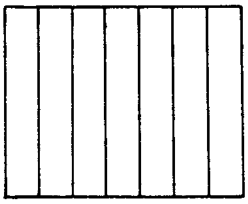
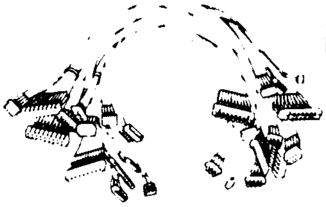
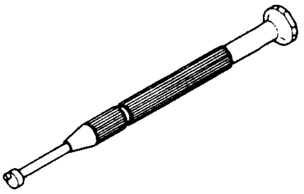
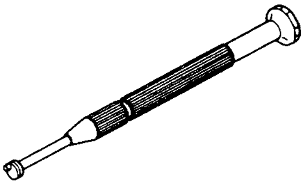
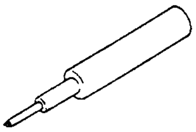
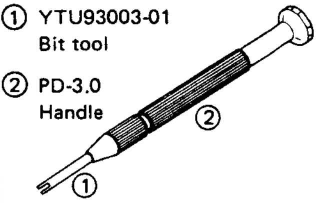
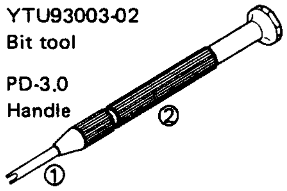
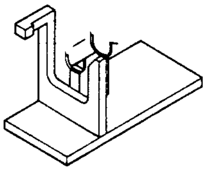
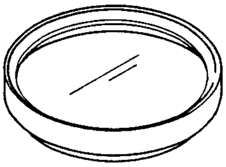
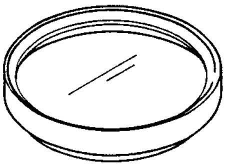
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
12	0.5H Delay Video Level	• REC then PB • Color bars • SEARCH play • Y/C separator	TP13 (VIDEO OUT)	R352 (0.5H VIDEO)	1) Connect the oscilloscope to TP13. 2) Adjust R352 to obtain the waveform illustrated in Fig. 3-5-11.  Fig. 3-5-11
13	0.5H Jump Det.	• E-E • No input signal	TP37 (JUMP DET)	R351 (S. JUMP)	1) Connect a jump wire between TP20 and TP42. 2) Connect a jump wire between TP35 and TP36. 3) Adjust R351 to obtain 30 kHz ± 0.2 kHz frequency at TP37.
14	0.5 H DC OFF SET	•REC then PB •Color bars •SEARCH play •Y/C separator	TP41 (V. PULS ON)	R383 (VIDEO OUT)	1) Connect a jump wire between TP20 and TP33. 2) Record a color bar signal in the LP mode. Playback and set to search. 3) Refer to the figure and adjust R383 to minimize the step difference at TP41. 4) Disconnect the jump wire.  Fig. 3-5-12

3.6 AUDIO CIRCUIT ($\boxed{0}\boxed{1}$ MAIN board)

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	PB Level	• MH-C4 (1 kHz) • PB • LINE OUT	LINE OUT $\boxed{0}\boxed{1}$ MAIN	R309 (AUDIO PB LEVEL) $\boxed{0}\boxed{1}$ MAIN	1) Play back the alignment tape MH-C4 (1 kHz segment) and adjust R309 so that signal level at LINE OUT becomes –6 dBs ± 0.5 dBs.
2	Audio Bias Level	• REC • No audio signal input	TP304 (BIAS LEVEL-2) TP303 (BIAS LEVEL-1) $\boxed{0}\boxed{1}$ MAIN	R342 (AUDIO BIAS LEVEL) $\boxed{0}\boxed{1}$ MAIN	1) Connect an audio tester's HOT side to TP303 and GND to TP304, respectively. 2) Adjust R342 so that bias level between TP303 and TP304 becomes 2.0 mVrms.

3.7 ADJUSTMENTS OF CAMERA SECTION

3.7.1 Required tools and test equipment for camera adjustments

Grey scale pattern (GS-2A) Reflection type, 11 steps, $\gamma = 2.2$	Color bars pattern (CC-2A) Reflection type, 7-color	Patching cord YTU93001C	Back focus adjustment handle PUJ37186A
			
Auto focus unit Back focus adjustment handle PUJ37186B	Auto focus unit Back focus adjustment chart PUJ93944	Adjustment jig for compact VTR YTU93004	Chip parts replacement jig ass'y YTU93003A
			① YTU93003-01 Bit tool ② PD-3.0 Handle 
Chip parts replacement jig ass'y YTU93003B	Adjust stand (YTU93910A)	Color temperature conversion filter (PUJ53340A - C2, C4, C8)	Neutral density filter (PUJ53341A - ND2, ND4, ND8)
① YTU93003-02 Bit tool ② PD-3.0 Handle 			
Color compensating filter - CC10Y (CC10Y filter made by Kodak)			
This filter is CC10Y in Kodak.			

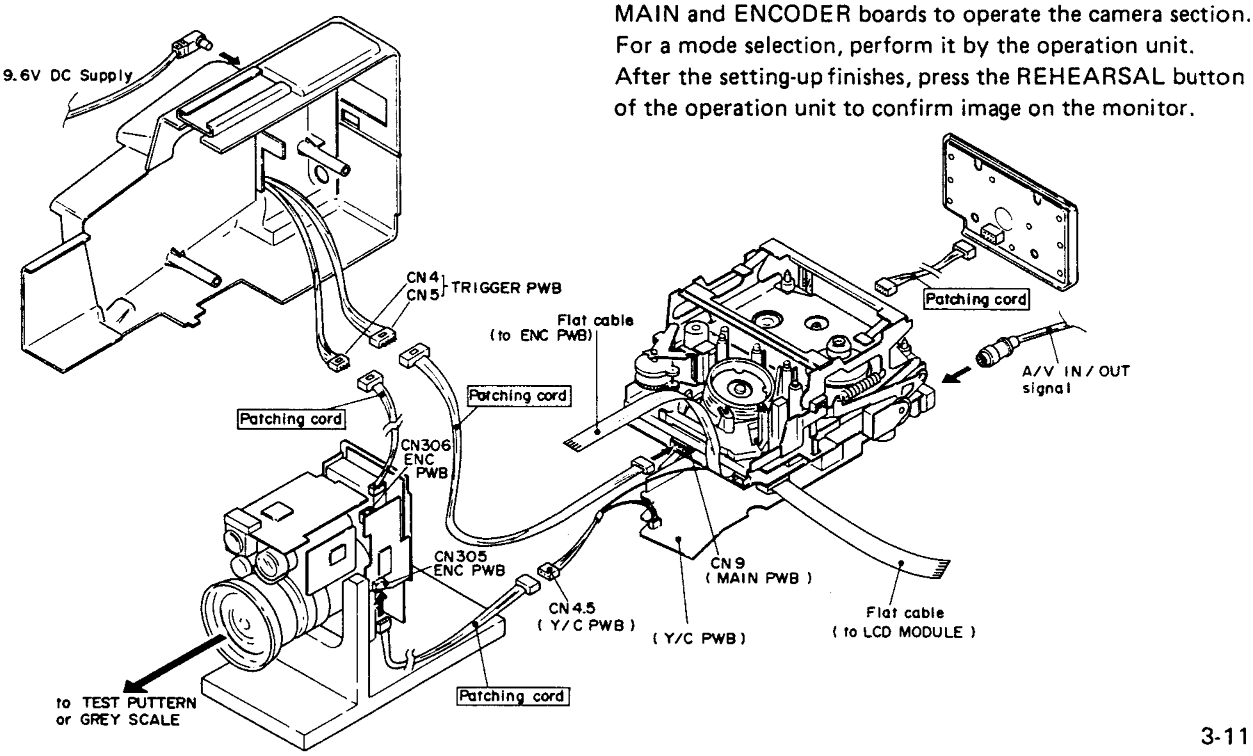
3.7.2 Standard setting and connection for adjustments and operation of the camera section

As the standard, separate the camera and deck sections each other and connect them with patch cords (see the figure below).

For the connection, connect the DC cord to the DC IN terminal of the lower case and connect patch cords to the connectors CN4 and CN5 of the trigger board inside the lower case. With these connections, supply 9.6 V DC to the MAIN and ENCODER boards to operate the camera section.

For a mode selection, perform it by the operation unit.

After the setting-up finishes, press the REHEARSAL button of the operation unit to confirm image on the monitor.


9.6V DC Supply
CN4
CN5
TRIGGER PWB
Flat cable
(to ENC PWB)
Patching cord
A/V IN / OUT
signal
Patching cord
Patching cord
CN306
ENC
PWB
CN305
ENC PWB
CN4.5
(Y/C PWB)
CN9
(MAIN PWB)
(Y/C PWB)
Flat cable
(to LCD MODULE)
Patching cord
to TEST PUTTERN
or GREY SCALE

3.7.3 Other tools and instruments necessary for adjustments

- Halogen lamps (3100 K each) . . . . 2 or more
- Color temperature conversion filters
- ND filter
- 9.6 V DC supply (AA-V5S or equivalent)
- Skin tone test pattern (of clear color phase)
- A/V output cable

3.7.4 Measuring instruments necessary for adjustments

- Oscilloscope
- Color video monitor
- DC power supply
- Digital voltmeter
- Lux meter
- Color temperature meter

3.7.5 Preparation and preliminary checks before adjustments

- **Precautions**

Electrical adjustments described in this section are generally required after replacing electrical parts.

In the event of malfunction with electrical circuits, troubleshooting with the aid of proper test instruments must be done first, and then, commence necessary repair, replacement, and adjustment, etc.

Since there are some troubles and symptoms which need not be adjusted, avoid unnecessary disturbance of the control settings and other items than the objects.

- **Preparation and preliminary check**

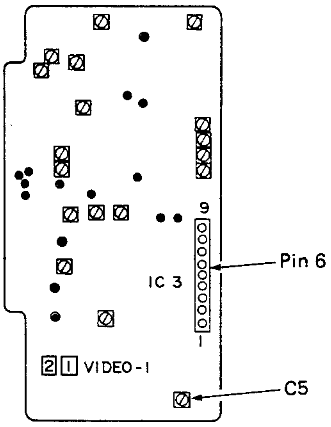
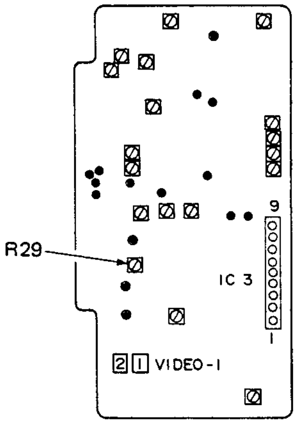
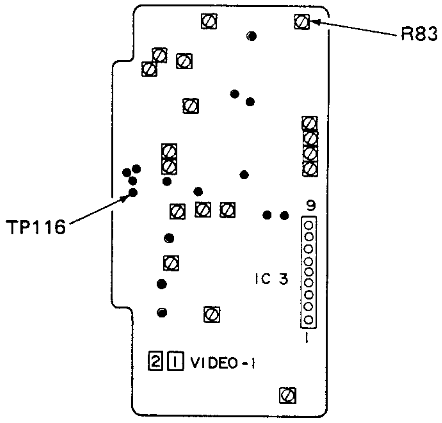
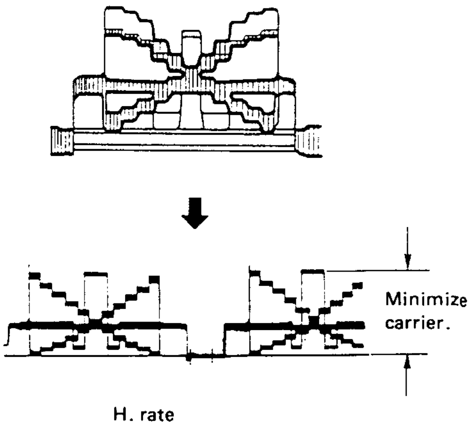
1. Test pattern illumination
   Use halogen lamps of 3100 K or more and set them to illuminate the test pattern evenly at approximately 4,000 Lux with the aid of a lux meter.
   Note that proper illumination of the test pattern is essential for performing correct adjustments. (It is recommended to use two or more halogen lamps.)
2. Test patterns
   Use new and clean test patterns.
3. This model adopts the fully automatic color temperature sensing system. Any adjustment such as white balance adjustment relating to the system is remarkably effected by ray and light applied to the color sensor.
   Pay careful attention to other light (fluorescent lamp, etc.) than the proper pattern illumination.
4. For adjustments, set the controls to the following positions unless otherwise specified.

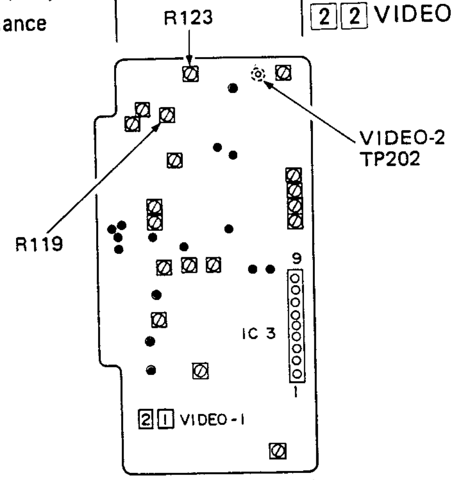
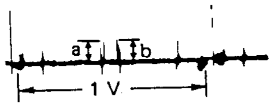
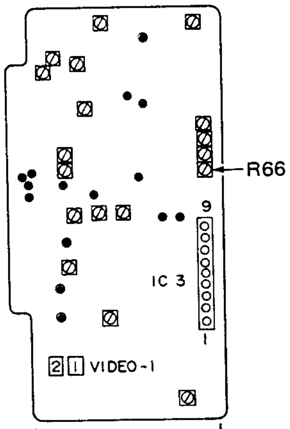
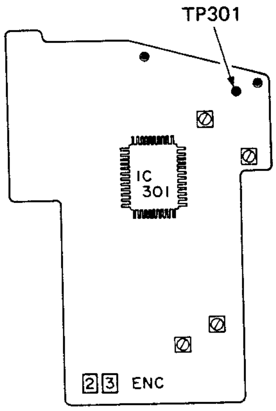
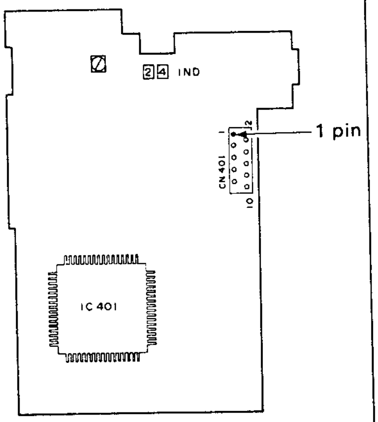
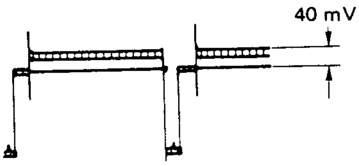
Control		Setting position
White Balance	:	PRESET INDOOR
Focus	:	MANUAL
Shutter Speed	:	STD
Iris	:	AUTO

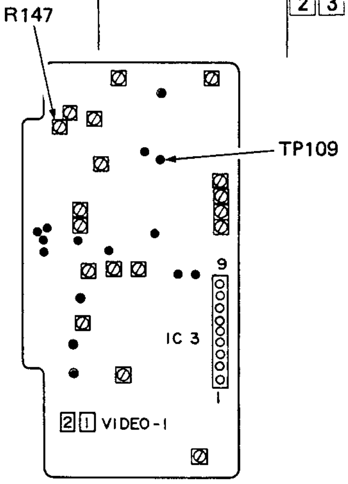
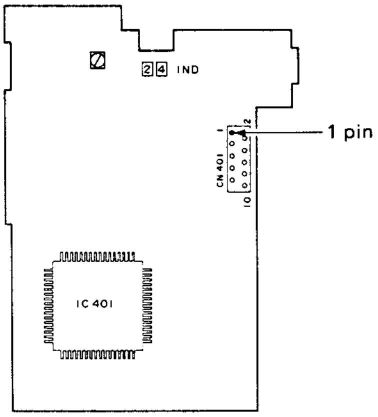
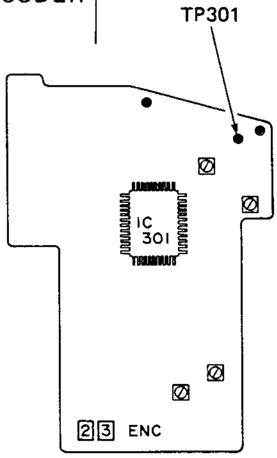
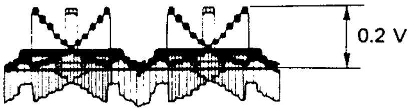
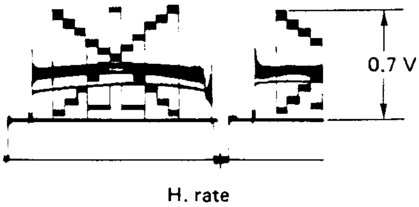
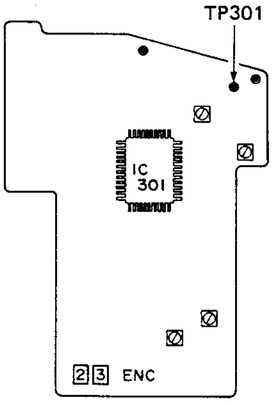
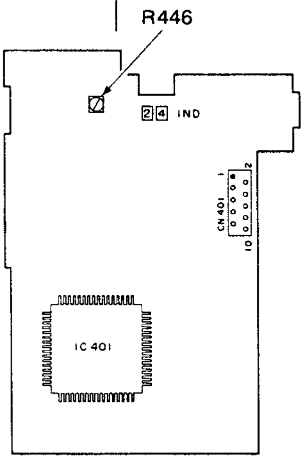
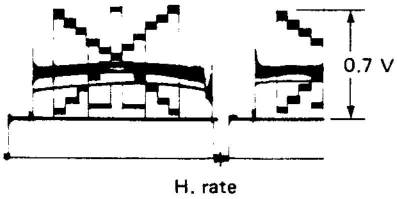
3.7.6 Adjustment procedure

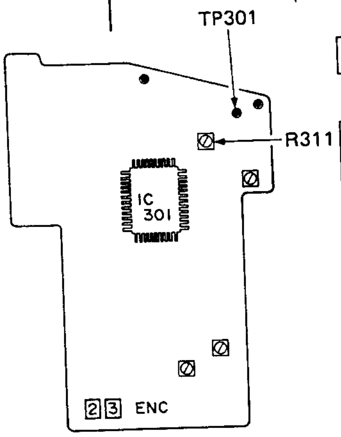
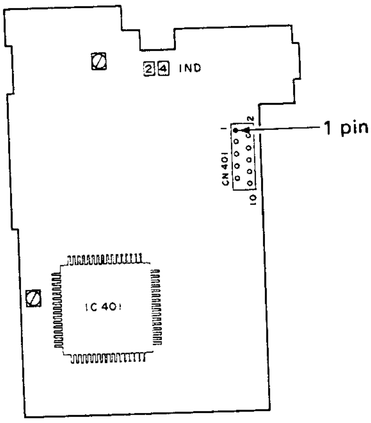
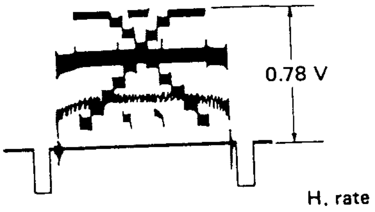
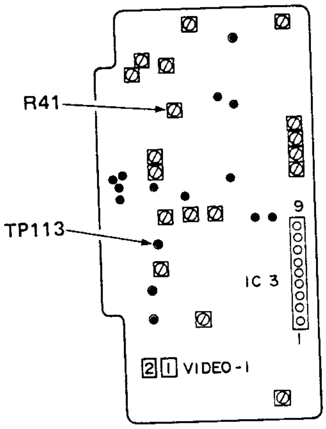
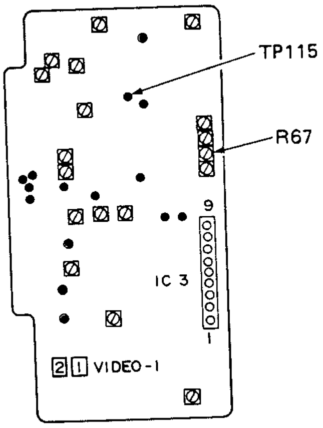
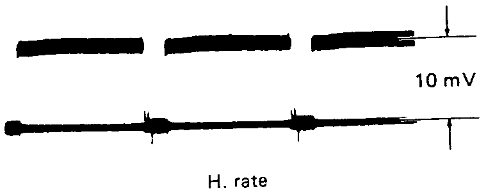
The following are the whole steps to adjust all VRs and other controls of the camera section in the order of adjustments. Consequently, here are some steps unnecessary for practical adjustments and repairs. Perform only the necessary items in practice.

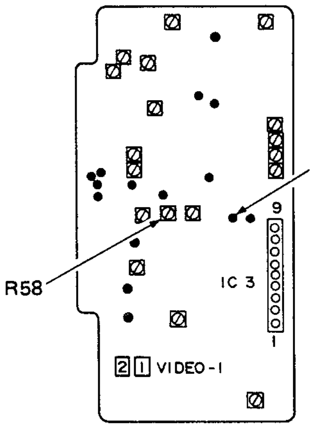
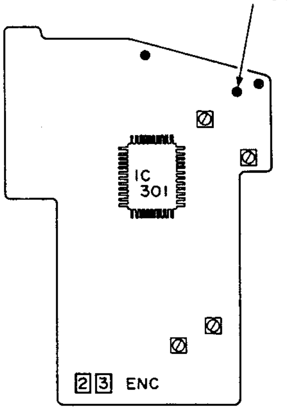
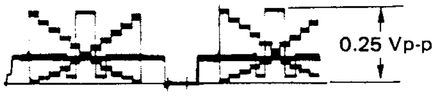
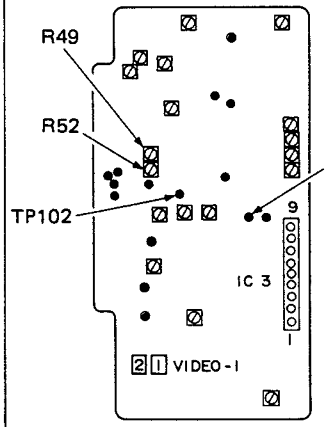
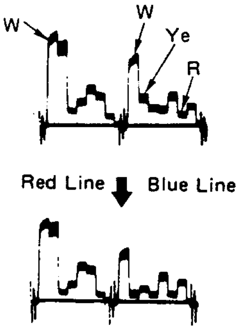
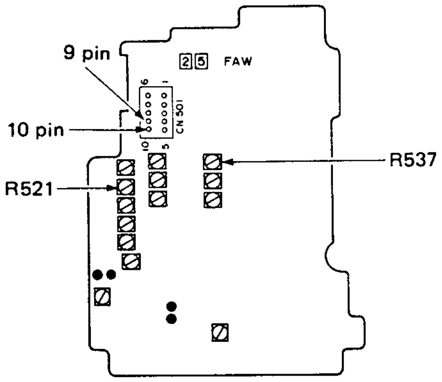
1. Clock Osc. (VIDEO-1 C5)
2. Blooming (VIDEO-1 R29)
3. Y_H Balance (VIDEO-1 R83)
4. V. Edge (2H/H) Balance (VIDEO-1 R119, R123)
5. Y_H Setup (VIDEO-1 R66)
6. Y_H Gain (VIDEO-1 R147)
7. EE LEVEL (INDICATOR R446)
8. White Clip (ENCODER R311)
9. AGC Gain (VIDEO-1 R41)
10. Y_L Setup (VIDEO-1 R67)
11. Y_L Process INPUT LEVEL (VIDEO-1 R58)
12. R/B Separation (VIDEO-1 R52, R49)
13. R/B Process INPUT LEVEL (FAW R537, R521)
14. Color Difference Balance (VIDEO-2 R244)
15. Noise Suppressor (VIDEO-2 R248)
16. Preset Indoor (VIDEO-1 R54, R56, R68, R110)
17. Preset FL (FAW R540, R524)
18. Preset Outdoor (FAW R543, R527)
19. Auto White Indoor (FAW R503, R506)
20. Auto White Outdoor (FAW R553, R549)
21. Indoor Limiter (FAW R515, R534)
22. Outdoor Limiter (FAW R518, R530)
23. Burst Level (ENCODER R301)
24. B-Y Gain, Chroma Gain
    (VIDEO-1 R144, ENCODER R333)
25. Back Focus

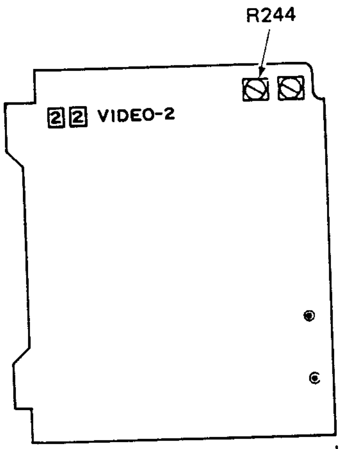
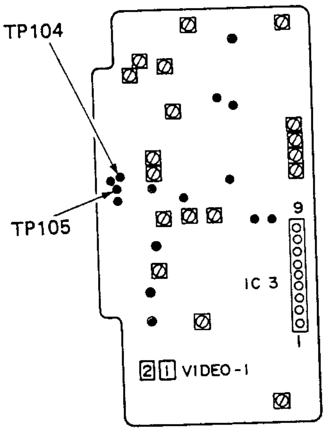
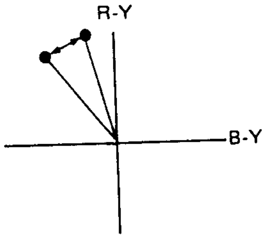
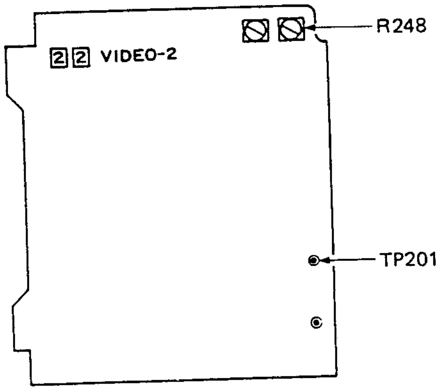
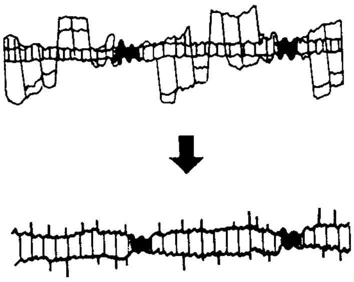
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	Clock Osc.	–  9 Pin 6 IC 3 1 2 1 VIDEO-1 C5	IC3 Pin 6 [2][1] VIDEO-1	C5 (CLOCK OSC) [2][1] VIDEO-1	1) Connect a frequency counter to pin 6 of IC 3, and adjust C5 to obtain 9.656250 MHz ± 30 Hz.
2	Blooming	–  9 R29 IC 3 1 2 1 VIDEO-1	TV-monitor	R29 (BLOOMING) [2][1] VIDEO-1	1) Pick up a fluorescent light and observe the image on a TV monitor. 2) Turn R29 fully in both directions and notice the range in which blooming occurs. 3) Then adjust R29 to where blooming is absent.
3	Y_H Balance	Grey scale  R83 9 TP116 IC 3 1 2 1 VIDEO-1	TP116 (1H DL) [2][1] VIDEO-1	R83 (Y_H BALANCE) [2][1] VIDEO-1	1) Pick up the grey scale pattern and observe waveform at TP116. 2) Adjust R83 to minimize carrier waveform on the whole.  Minimize carrier. H. rate

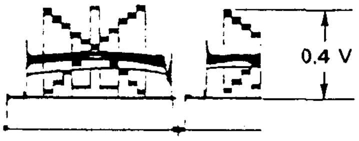
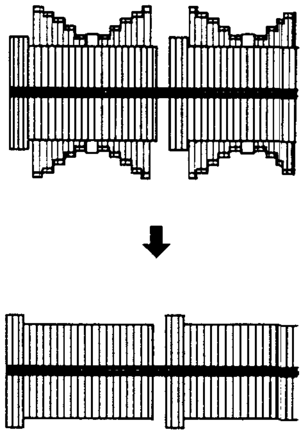
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
4	V. Edge (2H/1H) Balance	Grey scale  R123 VIDEO-2 TP202 R119 9 IC 3 1 2 1 VIDEO-1	TP202 (V. EDGE) 2 2 VIDEO-2	R119 (V. EDGE 2H) R123 (V. EDGE 1H) 2 1 VIDEO-1	1) Pick up the grey scale pattern and observe waveform at TP202. 2) Adjust R123 so that average level of the waveform becomes minimum. 3) Next adjust R119 so that levels of [a] and [b] of the waveform (See figure) becomes equal.  V. rate
5	YH Setup	–  R66 9 IC 3 1 2 1 VIDEO-1	TP301 (Y OUT) 2 3 ENCODER  TP301 IC 301 2 3 ENC  2 4 IND 1 pin 1 2 CN401 10 IC 401	R66 (YH SETUP) 2 1 VIDEO-1	1) Connect a wire to pin 1 of CN401 of the 2 4 IND board and GND. 2) Adjust R66 so that the setup level at TP301 becomes 40 mV. 3) Disconnect the wire from GND. **Note:** After the adjustment is completely performed, remove the wire from pin 1 of CN401 of 2 4 IND board.  H. rate

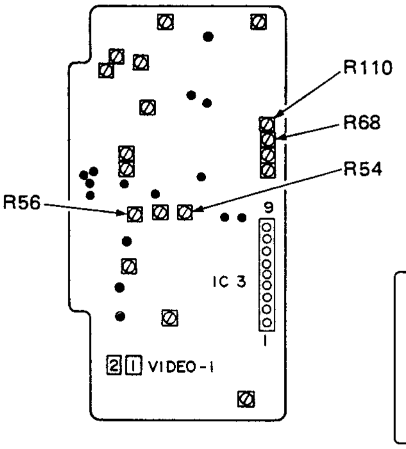
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
6	YH Gain  R147 TP109 9 IC 3 1 2 1 VIDEO-1	Grey scale	TP109 (SAMPLING) 2 1 VIDEO-1 TP301 (Y OUT) 2 3 ENCODER  2 4 IND 1 2 1 pin CN401 10 IC 401	R147 (YH GAIN) 2 1 VIDEO-1  TP301 IC 301 2 3 ENC	1) Connect the oscilloscope to TP109 with a resistor of approx. 10 kΩ, and pick up the grey scale pattern. 2) Connect a wire to pin 1 of CN401 of 2 4 IND board, and supply DC voltage so that signal level at TP109 becomes 0.2 V.  3) Connect the oscilloscope to TP301 and adjust R147 to obtain 0.7 V of signal level.  4) Open the wired circuit. 5) Again confirm the YH setup of the above step 5. **Note:** After completion of the adjustment, remove the wire from pin 1 of CN401.
7	EE Level  TP301 IC 301 2 3 ENC	Grey scale	TP301 (Y OUT) 2 3 ENCODER	R446 (IRIS ADJ) 2 4 INDICATOR  R446 2 4 IND 1 2 CN401 10 IC 401	1) Connect the oscilloscope to TP301. 2) With the iris set to AUTO, adjust R446 so that EE level becomes 0.7 V. 

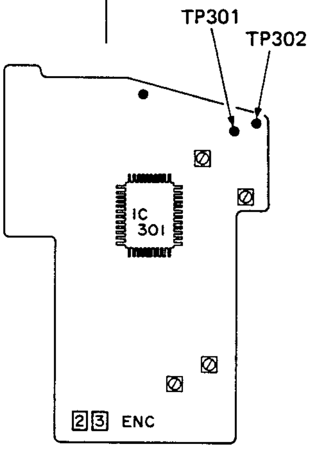
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
8	White Clip	Grey scale  TP301 R311 IC 301 2 3 ENC	TP301 (Y OUT) 2 3 ENCODER  2 4 IND 1 pin CN401 2 10 IC 401	R311 (W. CLIP) 2 3 ENCODER	1) Connect the oscilloscope to TP301 and pick up the grey scale pattern. 2) Connect a wire to pin 1 of CN401 of 2 4 IND board, and load the test point with DC voltage so that signal waveform becomes broken on the oscilloscope screen (see figure). 3) Adjust R311 to obtain 0.78 V of clipping level. 4) Open the wired circuit. **Note:** After the adjustment is completed, remove the wire from pin 1 of CN401. 
9	AGC	Lens: Closed  R41 TP113 9 IC 3 1 2 1 VIDEO-1	TP113 (AGC) 2 1 VIDEO-1	R41 (AGC) 2 1 VIDEO-1	1) Cap the lens. 2) With the oscilloscope connected to TP113, adjust R41 to obtain 1.1 V of the DC voltage.
10	Y_L Setup	Lens: Closed  TP115 R67 9 IC 3 1 2 1 VIDEO-1	TP115 (Y_L) 2 1 VIDEO-1	R67 (Y_L SETUP) 2 1 VIDEO-1	1) Cap the lens. 2) Connect the oscilloscope to TP115. 3) Adjust R67 so that the setup level becomes 10 mV. 

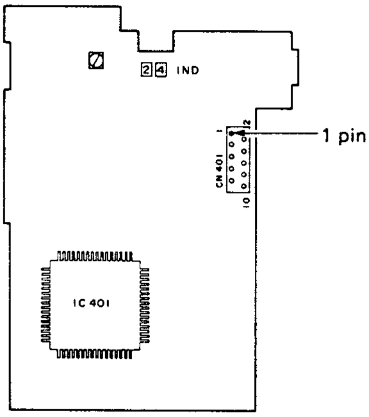
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
11	YL Process Input Level 	Grey scale	TP301 (Y OUT) 2 3 ENCODER TP103 (YL) 2 1 VIDEO-1 	R58 (YL LEVEL) 2 1 VIDEO-1	1) Observing the oscilloscope, confirm that signal level at TP301 is 0.7 V. (Refer to the step 7 "EE Level".) 2) Connect the oscilloscope to TP103 and adjust R58 so that signal level at TP103 becomes 0.25 Vp-p.  H. rate
12	R/B Separation  R49 R52 TP102 TP101 9 IC 3 1 2 1 VIDEO-I	Color bar chart	TP101 (R) TP102 (B) 2 1 VIDEO-1  H. rate	R52 (RED SEPA.) R49 (BLUE SEPA.) 2 1 VIDEO-1	1) Pick up the color bar chart. 2) Observe waveform at TP101 with the oscilloscope and adjust the oscilloscope's time axis to check signals of red and blue lines respectively. 3) Taking notice the blue line, adjust R52 to equalize signals levels of the color pattern's yellow and red sections. 4) In the same manner as in 2) above, observe waveform at TP102 and adjust its time axis. 5) Noticing the blue line, adjust R49 to equalize signal levels of the color pattern's yellow and red sections. **Note:** The blue line means the scanning line that is the smaller in signal level of the color pattern's white section.
13	P/B Process Input Level  9 pin 10 pin R521 R537 2 5 FAW CN501 10 9 5 1	Grey scale	CN501 pin 9 CN501 pin 10 2 5 FAW	R537 (PRESET R INDOOR) R521 (PRESET B INDOOR) 2 5 FAW	1) With the oscilloscope connected to pin 9 of CN501, and pick up the grey scale. Adjust R537 to obtain 2.58 V of DC voltage. 2) Change the oscilloscope connection to pin 10 of CN501, and adjust R521 to obtain 2.74 V of the DC voltage.

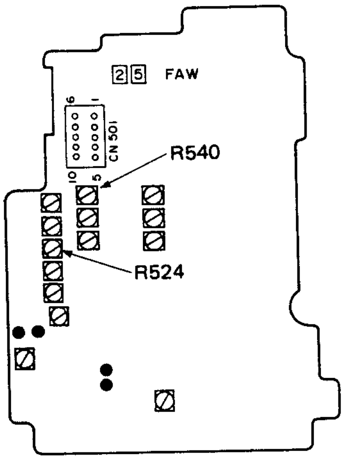
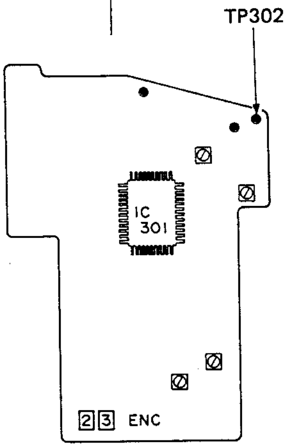
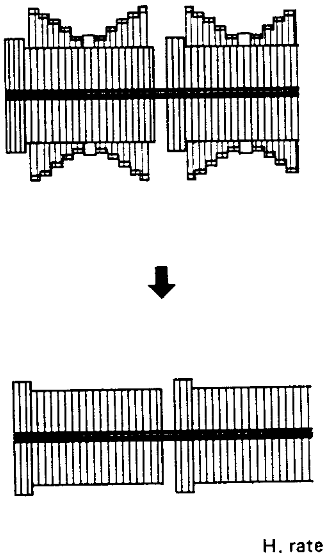
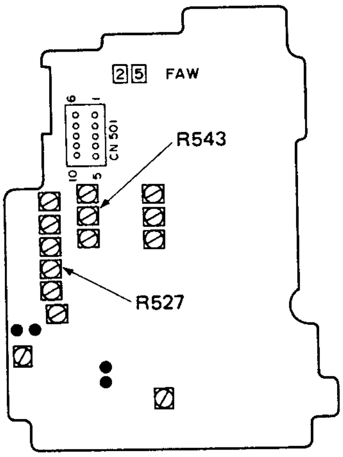
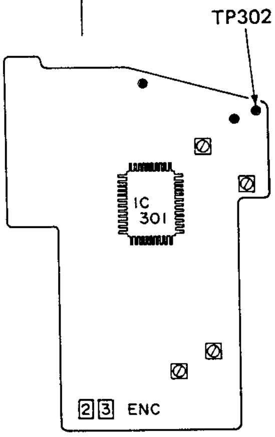
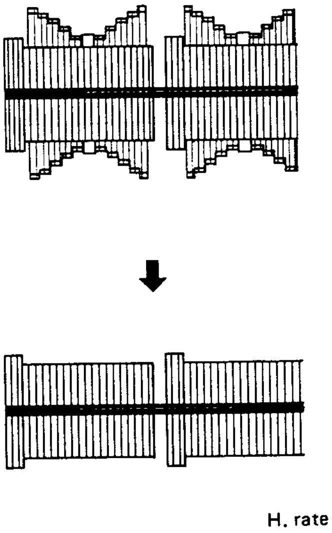
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
14	Color Difference Balance	Color bar chart  R244 2 2 VIDEO-2	TP104 (B-Y) TP105 (R-Y) 2 1 VIDEO-1  TP104 TP105 9 IC 3 1 2 1 VIDEO-1	R244 (COLOR DIF. BAL.) 2 2 VIDEO-2	1) Pick up the color bar chart. 2) Set the oscilloscope to observe signal from TP104 on the X-axis while TP105's signal on the Y-axis (X-Y mode). 3) Adjust R244 to minimize the red signal's movement.  X-Y mode
15	Noise Suppressor Balance	Color bar chart  2 2 VIDEO-2 R248 TP201	TP201 (COLOR NOISE) 2 2 VIDEO-2	R248 (NOISE SUP) 2 2 VIDEO-2	1) With the oscilloscope connected to TP201 pick up the color bar chart. 2) Adjust R248 to uniform waveform level at TP201 to the limit.  H. rate

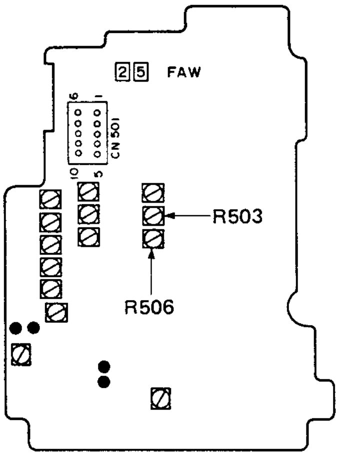
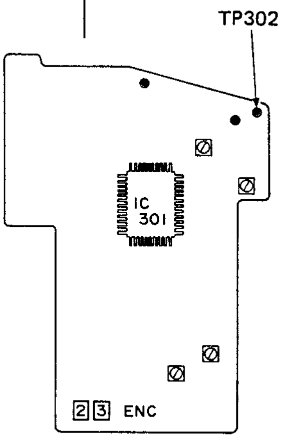
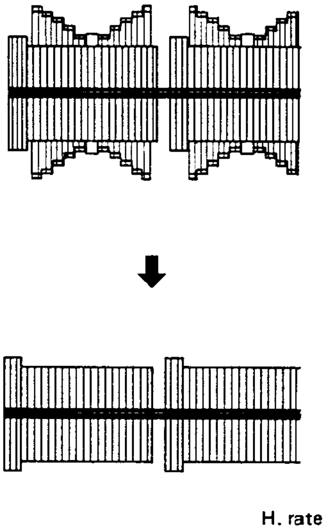
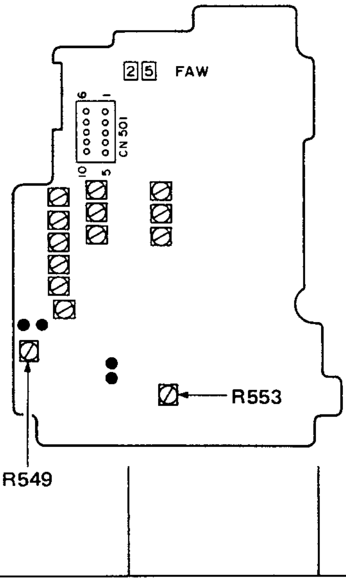
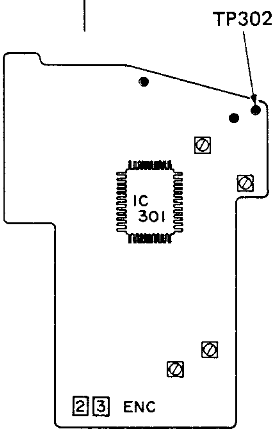
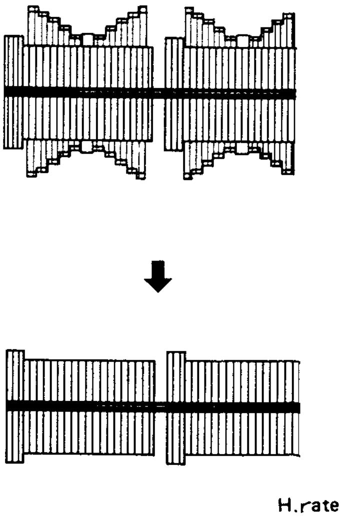
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
16	Preset Indoor	Grey scale	TP301 (Y. OUT) TP302 (C. OUT) 23 ENCODER	R68 (R SETUP) R110 (B SETUP) R54 (R LEVEL) R56 (B LEVEL) 21 VIDEO-1	1) Pick up the grey scale pattern. 2) Connect a wire to CN401 pin 1 of 24 IND board. 3) Observing the oscilloscope connected to TP301, supply DC voltage through the wire so that signal level at TP301 becomes 0.4 V.  H. rate 4) Observing signal at TP302 with the oscilloscope, adjust R68 and R110 to minimize carrier leaks of both R and B signals. 5) Open the wired circuit. 6) Observing waveform at TP302 with the oscilloscope, adjust R54 and R56 to minimize carrier leaks of R and B levels. 7) Repeat the above steps 3) through 6) to gain satisfactory results for each item. **Note:** After completion of adjustments, remove the wire from CN401 pin 1 of 24 IND board.  H rate

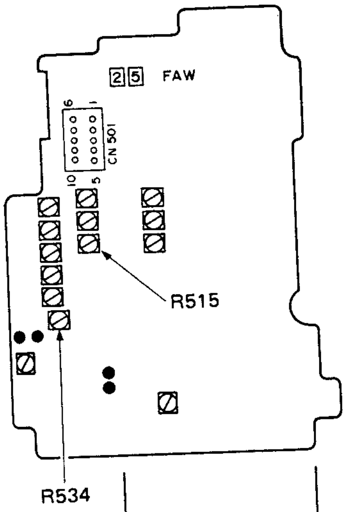
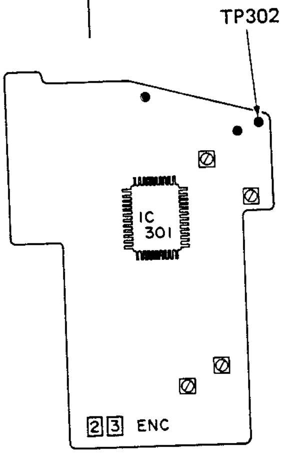
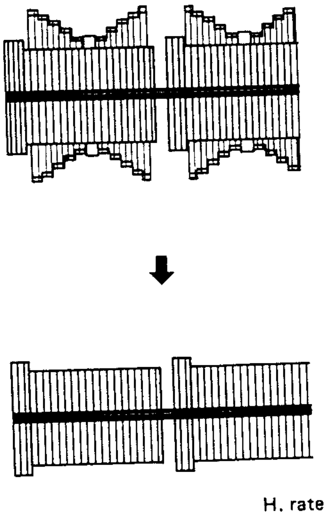
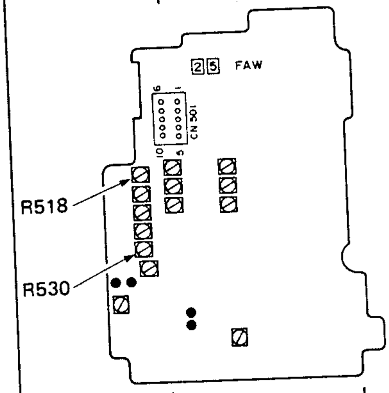
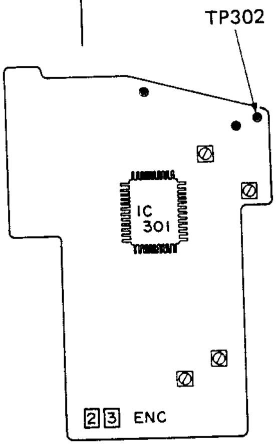
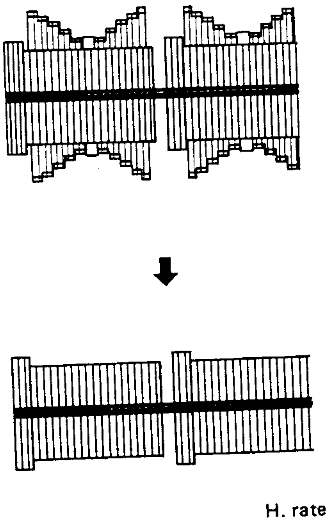


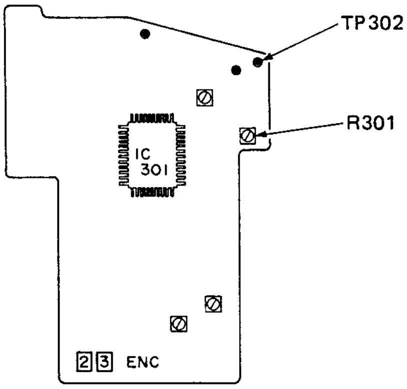
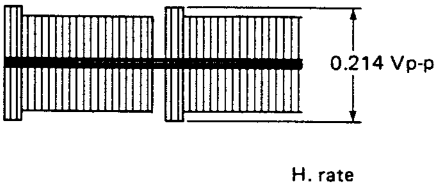
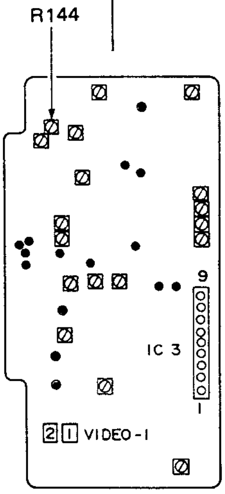
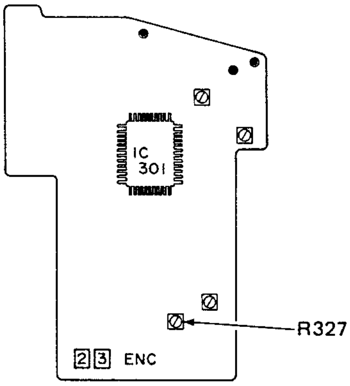


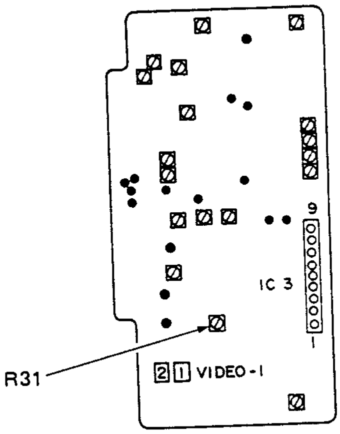
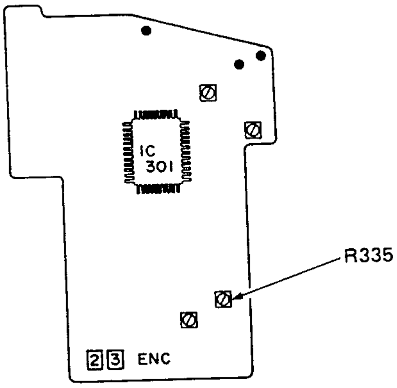


No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
17	Preset FL	Grey scale W. BAL. SW: FL (Flourescent light) mode Color temperature conversion filters (C4 + CC10Y) → Lens  2 5 FAW 6 1 CN 501 10 5 R540 R524	TP302 (C. OUT) 2 3 ENCODER  TP302 IC 301 2 3 ENC	R540 (PRESET R FL) R524 (PRESET B FL) 2 5 FAW	1) With C4 + CC10Y filters attached to the lens pick up the grey scale. 2) Press the LCD WHITE BALANCE switch to the mode for FL (fluorescent light) mode. 3) Adjust R540 and R524 alternately to minimize carrier leakage at TP302. 
18	Preset Outdoor	Grey scale W. BAL. SW: OUTDOOR Color temperature conversion filter C12 → Lens  2 5 FAW 6 1 CN 501 10 5 R543 R527	TP302 (C. OUT) 2 3 ENCODER  TP302 IC 301 2 3 ENC	R543 (PRESET R OUTDOOR) R527 (PRESET B OUTDOOR) 2 5 FAW	1) With C12 filter attached to the lens, pick up the grey scale. 2) Press the LCD WHITE BALANCE switch to the mode for OUTDOOR (sunlight). 3) Adjust R543 and R527 alternately to minimize carrier leakage at TP302. 

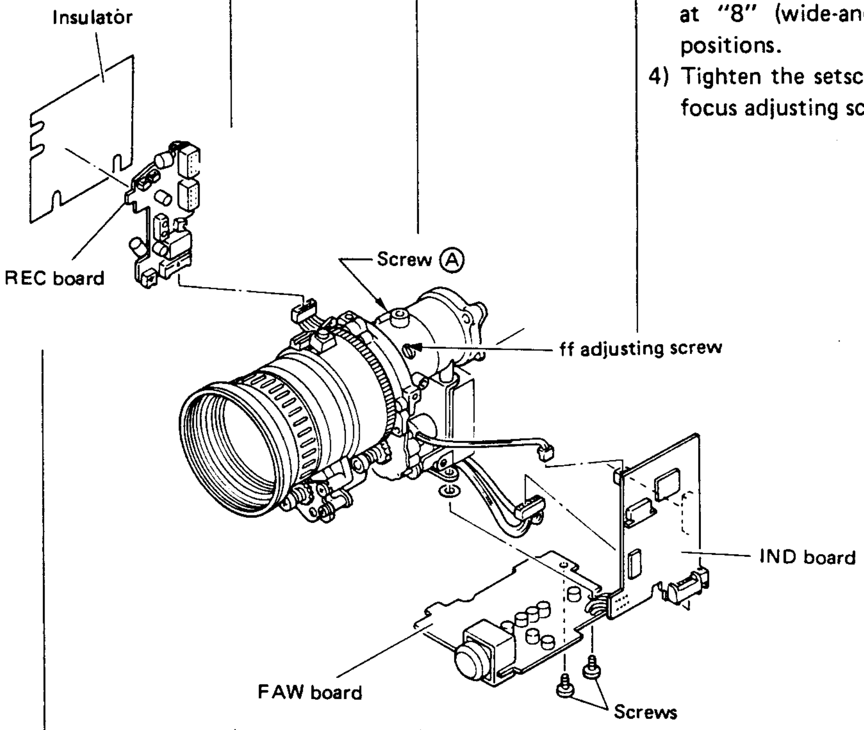
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
19	Auto White Indoor	Grey scale W. BAL. SW: AUTO mode  $\boxed{2}\boxed{5}$ FAW CN501 R503 R506	TP302 (C. OUT) $\boxed{2}\boxed{3}$ENCODER	R503 (AW INDOOR B) R506 (AW INDOOR R) $\boxed{2}\boxed{5}$FAW  TP302 IC 301 $\boxed{2}\boxed{3}$ ENC	1) Press the LCD WHITE BALANCE switch for the AUTO mode and pick up the grey scale. 2) Adjust R503 and R506 alternately to minimize carrier leakage at TP302. 
20	Auto White Outdoor	Grey scale W. BAL. SW: AUTO mode Color temperature conversion filters C10 → Lens C14 → Sensor  $\boxed{2}\boxed{5}$ FAW CN501 R553 R549	TP302 (C. OUT) $\boxed{2}\boxed{3}$ENCODER	R553 (AW R GAIN) R549 (AW B GAIN) $\boxed{2}\boxed{5}$FAW  TP302 IC 301 $\boxed{2}\boxed{3}$ ENC	1) With C10 filters attached to the lens and C14 filters attached to the sensor, pick up the grey scale. 2) Press the LCD WHITE BALANCE switch to set the mode for AUTO. 3) Adjust R553 and R549 alternately to minimize carrier leage at TP302. 

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
21	Indoor Limiter	Grey scale W. BAL. SW: AUTO mode Color temperature conversion filters W4 → Lens W14 → Sensor  2 5 FAW CN 501 10 5 6 1 R515 R534	TP302 (C. OUT) 2 3 ENCODER  TP302 IC 301 2 3 ENC	R515 (AW R INDOOR LIM) R534 (AW B INDOOR LIM) 2 5 FAW	1) With the LCD WHITE BALANCE switch pressed to be set for AUTO mode, pick up the grey scale. 2) Attach W4 filters to the lens and W14 filter to the sensor. 3) Adjust R515 and R534 alternately to minimize carrier leakage at TP302. 
22	Outdoor Limiter	Grey scale W. BAL. SW: AUTO mode Color temperature conversion filters C14 → Lens C24 → Sensor  2 5 FAW CN 501 10 5 6 1 R518 R530	TP302 (C. OUT) 2 3 ENCODER  TP302 IC 301 2 3 ENC	R518 (AW R OUTDOOR LIM) R530 (AW B OUTDOOR LIM) 2 5 FAW	1) With the LCD WHITE BALANCE switch pressed to be set for AUTO mode, pick up the grey scale. 2) Attach C14 filter to the lens and C24 filter to the sensor. 3) Adjust R518 and R530 alternately to minimize carrier leakage at TP302. 

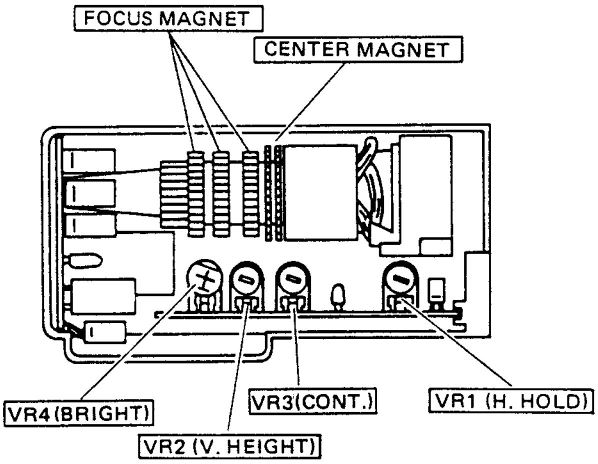
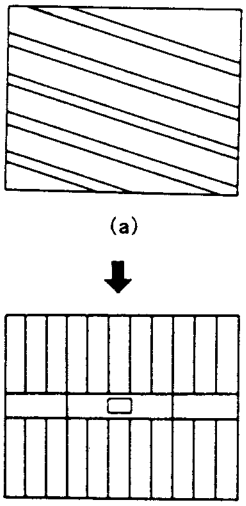
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
23	ID pulse Level	Lens: Closed	TP302 (C. OUT) $\boxed{2}\boxed{3}$ ENCODER  	R301 (BURST LEVEL) $\boxed{2}\boxed{3}$ ENCODER	1) Cap the lens. 2) Adjust R301 so that color burst signal level at TP302 becomes 0.214 Vp-p. 
24	B-Y Gain Chroma Gain	Subject easy to distinguish its color phase  	Monitor TV	R327 (CHROMA GAIN) $\boxed{2}\boxed{3}$ ENCODER R144 (B-Y GAIN) $\boxed{2}\boxed{1}$ VIDEO-1  	**Note:** For this adjustment, it is required that color phase and color depth of a monitor TV used and the deck section have been completely adjusted. 1) Pick up a colored subject, and, observing the monitor TV, adjust R327 so that chroma level becomes of appropriate value. 2) Pick up a subject whose color phase is easily distinguished, and observing the monitor TV perform fine adjustments of R144 so that color tones of red, green, blue and skin tone become the most natural. **Note:** For the step 2), only fine adjustment must be made.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
25	R/B Phase Shift	Grey Scale	Monitor TV	R31 (R/B PHASE SHIFT) [2][1] VIDEO-1	1 Observing the grey scale pattern on the monitor. 2 Adjust R31 to cancel color noise at the side of white section of the grey scale pattern. 
26	OFF SET LEVEL	Grey Scale	Monitor TV	R335 (OFF SET LEVEL) [2][3] ENCODER	1 Observing the grey scale pattern on the monitor 2 Adjust R335 to get the white and black picture on the monitor. 

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
27	Back Focus	Subject in the distance of 3 m Iris: Opened ND filter	VIDEO OUT (on Monitor)	Master Lens	● **Preparation** 1. Attach a proper ND filter to open the iris fully in the daylight. If the monitor screen is dark, the iris is fully opened. 2. If it would be still bright, attach additional ND filter(s) to cut the incident light and confirm that the brightness of the image does not vary by changing the iris set position. ● **Adjustment** 1) Loosen the setscrew Ⓐ, and slowly turn the ff adjusting screw to focus the lens observing the monitor. 2) Set the zoom lens at "48" graduation and confirm that the subject is in focus. 3) Set the lens focus at "3 m" graduation and shoot a subject in the distance of 3 m away. In this state, confirm that the picture is in focus in two ways that the zoom lens is set at "8" (wide-angle) and "48" (telephoto) positions. 4) Tighten the setscrew Ⓐ, and lock the back-focus adjusting screw.



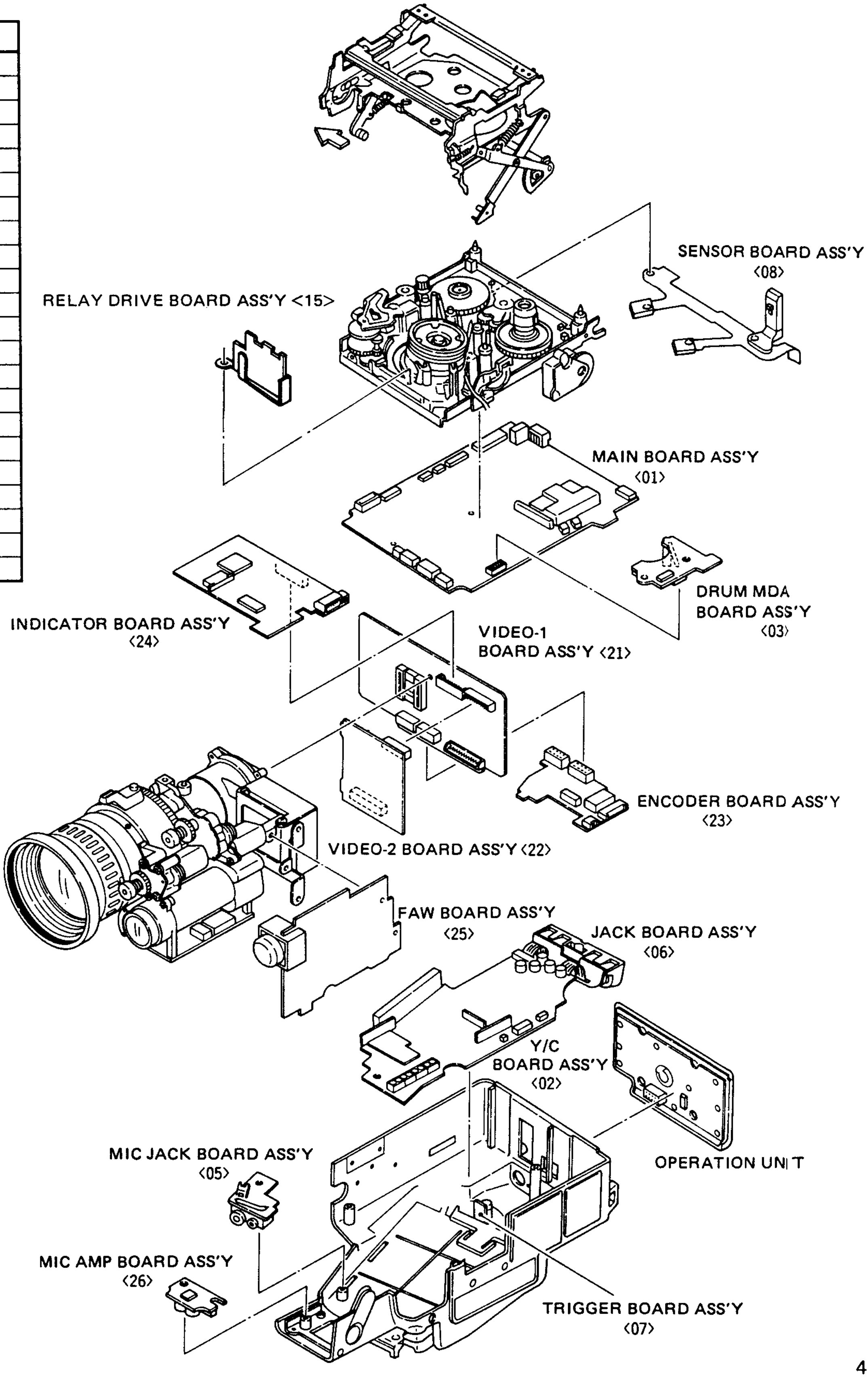
3.8 ELECTRONIC VIEWFINDER (E. VF) ADJUSTMENT

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	Horizontal Sync.  FOCUS MAGNET CENTER MAGNET VR4(BRIGHT) VR3(CONT.) VR1 (H. HOLD) VR2 (V. HEIGHT)	Grey scale or Monoscope	E. VF (CRT)	VR1 (H. HOLD)	1) Observing the viewfinder screen, turn VR1 fully clockwise to make unstable pictures. 2) Gradually turn VR1 counterclockwise until pictures become stable. When the picture is completely stabilized, mark the VR position for future reference. 3) Turn VR1 counterclockwise again to make the picture unstable. 4) Gradually turn VR1 clockwise and stop it when the picture becomes stable again. At this time, makr the VR position, too. 5) Finally set VR1 at the midpoint between the two markings.  (a) (b) **Fig. 3-8-1**
2	Vertical Scanning	Grey scale or Monoscope	E. VF (CRT)	VR2 (V. HEIGHT)	1) Observing the viewfinder, adjust VR2 for normal picture amplitude.
3	Centering	Grey scale	E. VF (CRT)	Centering Magnet	1) Pick up the grey scale to locate it in the center of the monitor TV screen, and adjust the centering magnet so that the image of the grey scale is located in the center of the viewfinder.
4	Focus	Grey scale	E. VF (CRT)	Focus Magnet	1) Observing the viewfinder, adjust the focus magnet of the deflection yoke to obtain a clear picture of the central part of the grey scale.
5	Brightness	Iris: Closed (Lens capped)	E. VF (CRT)	VR4 (BRIGHT)	1) With the iris closed, adjust VR4 so that the CRT raster in the viewfinder is just barely visible.
6	Contrast	Grey scale	E. VF (CRT)	VR3 (CONT.)	1) Observing the viewfinder screen, adjust VR3 to obtain the best gradation of the grey scale image.

SECTION 4
DIAGRAMS AND CIRCUIT BOARDS

4.1 CIRCUIT BOARD LOCATIONS

No.	PWB NAME
01	MAIN
02	Y/C
03	DRUM MDA
05	MIC JACK
06	JACK
07	TRIGGER
08	SENSOR
15	RELAY DRIVE
21	VIDEO-1
22	VIDEO-2
23	ENCODER
24	INDICATOR
25	FAW
26	MIC AMP


SENSOR BOARD ASS'Y
<08>
RELAY DRIVE BOARD ASS'Y <15>
MAIN BOARD ASS'Y
<01>
DRUM MDA
BOARD ASS'Y
<03>
INDICATOR BOARD ASS'Y
<24>
VIDEO-1
BOARD ASS'Y <21>
ENCODER BOARD ASS'Y
<23>
VIDEO-2 BOARD ASS'Y <22>
FAW BOARD ASS'Y
<25>
JACK BOARD ASS'Y
<06>
Y/C
BOARD ASS'Y
<02>
OPERATION UNIT
MIC JACK BOARD ASS'Y
<05>
MIC AMP BOARD ASS'Y
<26>
TRIGGER BOARD ASS'Y
<07>

4.2 SCHEMATIC DIAGRAM NOTES

1. parts are safety related parts. When replacing them, be sure to use the specified parts.
2. Voltage and waveform measurment condition

- **DECK**

Voltage : DC-measured with a digital voltmeter during recoding (SP mode) and play back (SP-mode) with alignment tape. Where voltage differ between recoding and playback, the voltage during playback is shown in parenthese. (used to Y/C separator)

Waveform :

VIDEO System; Measured with a color bar during recording (SP mode) with alignment tape. (used to Y/C separator)

AUDIO System; Measured with 1 kHz (–8 dBs) during recoding and with alignment tape (1 kHz) during playback.

- **CAMERA**

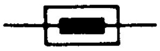
Voltage : Measured with a digital voltmeter in DC range; iris closed. (lens cap on)

Waveform : Measured as the grey scale pattern which lighted up brightly is shot in the Full-Auto mode.

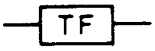
3. Unit indications

No units: [Ω]	No units: [μF]	No units : [μH]
K: [kΩ]	P: [pF]	m: [mH]
M: [MΩ]		

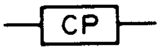
Thermistor



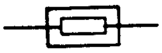
Thermal Fuse

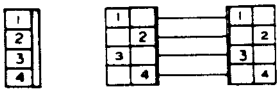


Circuit Protector

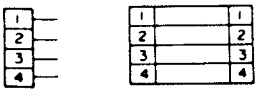


Posistor

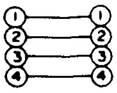




: Connector



: Board in connector



: Direct connection

COUNT UP : Active only at high.

$\overline{\text{COUNT DOWN}}$: Active only at low.

(VS) : Connected pattern in the board.

(MS) Abbreviations

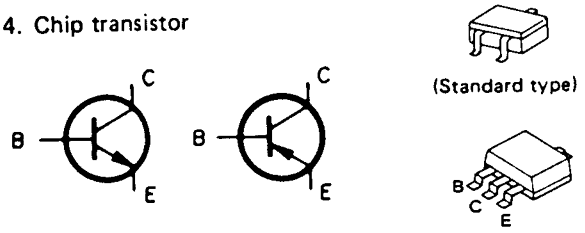
(SM)

V : Video M : Mechacon

S : Servo A : Audio

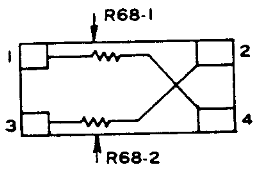
VS : Signal flow from video to servo.

4. Chip transistor



5. Double chip resistors

These devices contain two resistance elements of differing values. In the example shown in the figure, R68 is comprised of R68-1 between terminals 1 and 4, and R68-2 between terminals 2 and 3.



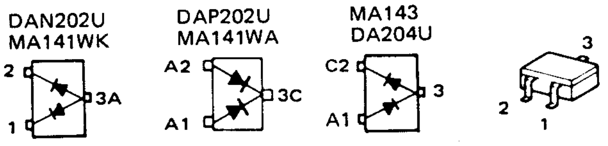
R68 PU59735-472Y103

472 indicates 4.7 kΩ for R68-1

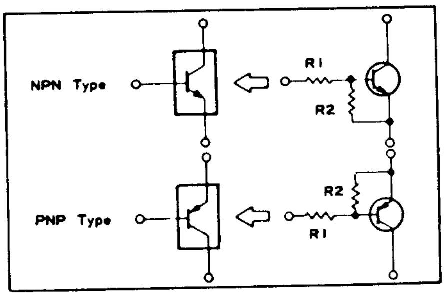
103 indicates 10 kΩ for R68-2

As can be noted from the figure, left-right reversal of the device does not change the connection values. However, turning the device upside-down will result in incorrect connectin.

6. Chip diode



7. Digital transistor



RESISTOR VALUES

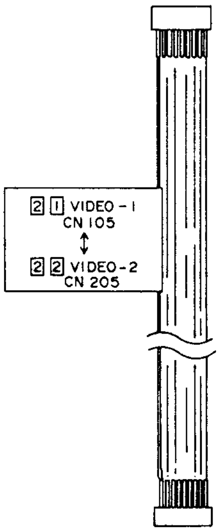
JUNCTION	Part No.	R1 (kΩ)	R2 (kΩ)
PNP	DTA124EU	22	22
NPN	DTC144EU	47	47
	DTC124EU	22	22

Note: The digital transistor includes built in resistors. It features small size and high reliability. Both PNP and NPN types are available.

USES: INVERTER, INTERFACE, DRIVER CIRCUITS.

8. Patchcords
   Patchcords are available for blue shaded portions of the overall circuit diagram.
   The patchcords are provided with tags to indicate connection points. Connect as indicated.

   Example: As shown in the Figure, connect one side to VIDEO-1 board CN105 and the other to VIDEO-2 board CN205.

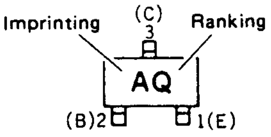
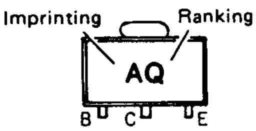
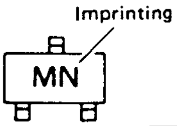


4.3 REPLACING SUBMINIATURE "CHIP" PARTS

1. Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
2. Additional compactness is achieved by using subminiature chip parts for certain circuit elements. When replacing these parts, note the cautions outlined below.

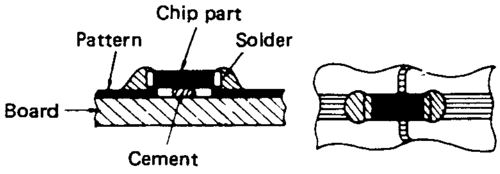
   Chip transistors and diodes used in this model are outlined as follows.

- **Chip transistor and chip diode imprinting**

Transistors				Diodes	
Type	Imprinting	Type	Imprinting	Type	Imprinting
DTA124EU	15	2SB798	DM, DL, DK	DAN202U	N
DTC124EU	25	2SC2412K(S)	BS	DAP202U	P
DTC144EU	26	2SC3931	UB~UD	DA204U	D14
DTC144WU	86	2SC3936(BC)	KB, KC	FMN1	N1
FMC2	C2	2SC4081	BQ~QS	IMN10	N10
FMG1	G1	2SC4098(PQ)	AP, AQ	MA141WA	MN
FMG2	G2	2SC4099(NP)	JN, JP	MA141WK	MT
FMU1	U1	2SC4176	B33, B34, B35	MA143	MC
FMW1	W1	2SC4177(56)	L5, L6	MA3075H	7.5H
FMW3	W3	2SC4178(34)	F13, F14	MA704	MIK
2SA1036K	HP~HR	2SD1819	YQ~YS	MA716	M1U
2SA1532(BC)	EB, EC	2SJ146	4D	RD7.5M-T1B2	752
2SA1576	FQ, FR	2SK198P,Q	10P, 10Q	RD7.5MB3	753
2SA1610	Y33, Y34	2SK620	3N	RD8.2MB2	822
2SA1611(56)	M5, M6	2SK665	30		
2SB1218(RS)	AR, AS	3SK179	V03		
2SB624	BV4, BV5				
					

Note ; (   ) refers to Transistor rank.

3. Required tools:
   1) Fine tipped, well insulated soldering "pencil" (with absorbent) (Temp : 130°C ~ 260°C).
   2) Tweezers
   3) Blower type hair dryer.
4. Soldering cautions:
   1) Do not apply heat for more than 3 seconds.
   2) Avoid using a rubbing stroke when soldering.
   3) Discard removed chips; do not reuse them.
   4) Supplementary cementing is not required.
   5) Use care not to scratch or otherwise damage the chips.
5. Soldering conditions:
   1) Resistors, capacitors, etc.



   2) Transistors, diodes, etc.

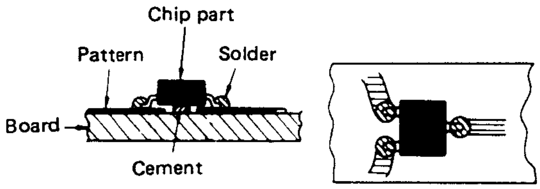


Fig. 4-2

6. Removal (resistors, capacitors, etc.):
   1) Grasp the part with repair jig and melt the solder at one side.

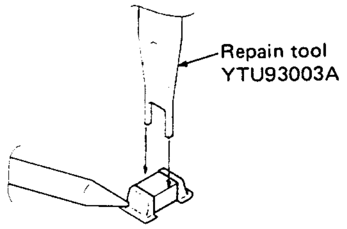


Fig. 4-3

   2) Melt the solder at the other side and remove the part with a twisting motion.

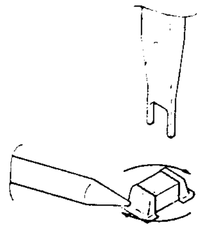


Fig. 4-4

7. Removal (transistors, diodes, etc.):
   1) Melt the solder of one lead.

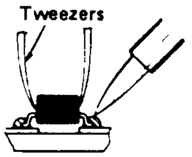


Fig. 4-5

   2) Lift the side of that lead upward.

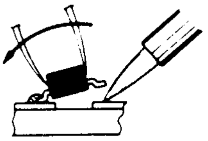


Fig. 4-6

   3) Simultaneously heat solder of the two remaining leads and lift part to remove.

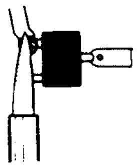


Fig. 4-7

8. Preheating (except for semiconductors):
   Immediately before installing new resistors or capacitors, use a blower type hair dryer and preheat the part for about two minutes at approximately 150°C.

9. Replacement:
   1) Presolder the contact points of the circuit pattern.

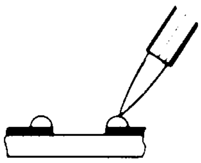


Fig. 4-8

   2) Press the part downward with repair jig and apply the soldering pencil as indicated in the figure.

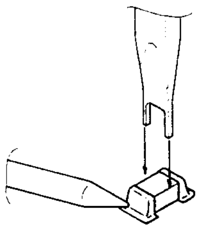


Fig. 4-9

4.4 KEY TO ABBREVIATIONS

A	AC	Alternating Current
	ACC	Automatic Color Control
	A/CTL	Audio/Control
	ADC	Analog to Digital Converter
	ADD	Adder
	ADJ	Adjustment
	AE	Audio Erase
	AEF	Automatic Editing Function
	AF	**Auto Focus**
	AFC	Automatic Frequency Control
	AFT	Automatic Fine Tuning
	AGC	Automatic Gain Control
	AH	Audio Head
	AL	**After Loading, Allways**
	ALC	Automatic Light Compensation Automatic Level Control
	ALM	Alarm
	ALU	Arithmetic Logic Unit
	AM	Amplitude Modulation
	AMP	Amplifier
	ANT	Antenna
	APC	Automatic Pedestal Control Automatic Phase Control
	APL	Average Picture Level
	A S M	Audio/Servo/Mechacon
	ASS'Y	Assembly
	ATT	Attenuator
	AUD	Audio
	AUTO	Automatic
	AUX	Auxiliary
B	B	**Base, Blue**
	BAL	Balance
	BATT	Battery
	BBD	Bucket Brigade Device
	BCD	Binary Coded Decimal
	BEG	Beginning
	BF	**Behind Focus**
	BFP	Burst Flag Pulse
	BPF	**Band Pass Filter**
	BIT	Binary Digit
	BLK	Black, Blanking
	BLU	Blue
	BNC	Bayonet Connector
	BOT	Beginning of Tape
	BPF	Bandpass Filter
	BRK	Brake
	BRN	Brown
	BRT	Brightness
	BT	Band Tuning
	BUFF	Buffer
	BW or B/W	Black and White
C	C	**Capacitance, Collector, Color, Character**
	CA	**Camera**
	CAL	Calibration
	CAP	Capstan, Capacitor
	CAR	Carrier
	CARR	Carrier
	CASS	Cassette
	CC	Cassette Compartment
	CCD	Charge Coupled Device
	CCT	Circuit
	CdS	Cadmium Sulphide
	CD	Count Down
	CE	Chip Enable
	CF	**Ceramic Filter, Color Frame, Correct Focus**
	CH	Channel
	CHG	Charge
	CHROMA	Chrominance
	CLK	Clock
	CLR	Clear
	CMD	Command
	CMOS	Complementary Metal Oxide Semiconductor
	CNT	Count, Counter
	COL	Color
	COM	Common
	COMB	Combination Comb Filter
	COMP	Comparator Composite Compensation
	CONN	Connector
	CONV	Converter
	CP	Circuit Protector Clamp Pulse
	CPC	Capstan Phase Control
	CPU	Central Processing Unit
	CTC	Crosstalk Cancel
	CTL	Control
D	D	Drum, Digital, Diode, Drain
	DAC	Digital to Analog Converter
	dB	Decibel
	DC	Direct Current
	DD	Direct Drive
	DEC	Decoder
	DEMOD	Demodulator
	DEMUX	Demultiplexer
	DET	Detector
	DEV	Deviation
	DFRS	Drum Free Running Stop
	DG	Differential Gain
	DIF	Differential
	DISCR	Discriminator
	DL	Delay Line
	DOC	Dropout Compensator
	DOD	Drop Out Detector
	DP	Differential Phase
	DPC	Drum Phase Control
	DYAC	Dynamic Aperture Control
E	E	Edit, Emitter
	EDP	Electronic Data Processing
	E-E	Electric to Electric
	EF	Emitter-Follower
	EMP	Emphasis
	EN	Enable
	ENC	Encoder
	ENV	Envelope
	EOT	End of Tape
	EP	Extended Play
	EQ	Equalizer
	ES	Electronic Switch
	ESNS	End Sensor
	EXP	Expander
	EXT	External
F	F	Farad, Fuse
	F ADV	Frame Advance
	FDP	Fluorescent Display Panel
	FE	Full Erase
	FET	Field Effect Transistor
	FF	**Fast Forward, Front Focus** Flipflop
	FG	Frequency Generator
	FM	Frequency Modulation
	FR	Full Recording, Frame, Fusible Resistor
	FREQ	Frequency
	F-V CONV	Frequency to Voltage Converter
	FWD	Forward
	FWD S	Forward Search
G	G	Green, Gate, Grid
	GEN	Generator
	GND	Ground
	GRN	Green
	GRY	Gray
H	H	High, Henry, Hour
	HBF	Horizontal Burst Flag
	HD	Horizontal Drive
	HPF	Highpass Filter
	Hz	Herz

I

IC : Integrated Circuit
ID : Identification (Pulse)
IF : Intermediate Frequency
IFR : Infrared
IFT : Intermediate Frequency Transformer
IND : Indicator
INH : Inhibit
INS : Insert
INT : Internal, Interrupt
INV : Inverter, Interleave
I/O : Input/Output
IR : Infrared

L

L : Low, Left
LCD : Liquid Crystal Display
LED : Light Emitting Diode
LIM : Limiter
LIN : Linearity
LLD : Low Light Detector
LOAD : Loading (Cassette)
LP : Long Play
LPF : Lowpass Filter
LSB : Lower Sideband

M

M : Motor, Mega
MAX : Maximum
MDA : Motor Drive Amplifier
MECHACON : Mechanism Control
MIC : Microphone
MIN : Minimum
MIX : Mixer, Mixing
MMV : Monostable Multivibrator
MNOS : Metal Nitride Oxide Semiconductor
MOD : Modulation, Modulator
MODEM : Modulator-Demodulator
MON : Monitor
MOS : Metal Oxide Semiconductor
MPX : Multiplexer, Multiplex
MS : Mode Select
MUT : Muting

N

NAND : Not-And
NC : Not Connected, Normally Closed
NFB : Negative Feedback
NLN : Non-Linear
NO : Normally Open
NOR : Normal, Not-Or
NR : Noise Reduction

O

OP : Operation
OPAMP : Operational Amplifier
ORG : Orange
OSC : Oscillator

P

PB : Playback
PC : Photocoupler, Pulse Counter
PCM : Pulse Code Modulation
PG : Pulse Generator
PGM : Program
PI : Photo Interrupter
PIC : Picture Control
PIF : Picture Intermediate Frequency
PLA : Programmable Logic Array
PLL : Phase Locked Loop
PNK : Pink
POS : Position
p-p : Peak-to-Peak
PR : Pinch Roller
PREAMP : Preamplifier
PRL : Preroll
P/S : Pause/Still
PSC : Pulse Swallowing Control
PU : Pickup
PUT : Programmable Unijunction Transistor
PWB : Printed Wiring Board
PWM : Pulse Width Modulation
PWR : Power

Q

Q : Quality Factor

R

R : Red, Right
RA : Resistor Array
RAM : Random Access Memory
REC : Recording
REF : Reference
REG : Regulated, Regulator
REM : Remote
REMOCON : Remote Control (Unit)
REV : Reverse
REV S : Reverse Search
REW : Rewind
RF : Radio Frequency
ROM : Read Only Memory
R/P : Record/Playback
RPT : Repeat
RS FF : RS Flipflop
RST : Reset
RT : Rotary Transformer
RUN : Running
RY : Relay

S

SAW : Sawtooth, Surface Acoustic Wave
SC : Subcarrier, Simulcast
SCH : Search
SEL : Select, Selector
SENS : Sensor
SEP : Separator
SF : Source Follower
SFF : Short Fast Forward
SIF : Sound Intermediate Frequency
SN : Signal to Noise Ratio
SOL : Solenoid
SOS : Sound on Sound
SP : Standard Play
SR : Supply Reel
SREW : Short Rewind
S/S : Slow/Still
SSG : Sync Signal Generator
SSNS : Start Sensor
STD : Strobe Data, Standard
SUP : Supply
SW : Switch
SWD : Switched
SYNC : Synchronization

T

TAL : Tally
TBC : Time Base Corrector
TC : Tension Control, Time Code
TEN : Tension
TF : Thermal Fuse
TIM : Timing
TK : Tracking
TNR : Tuner
TP : Test Point
TPZD : Trapezoid
TR : Transistor, Trimmer
TRANS : Transformer
TU : Take-up

U

UL : Unloading
UNREG : Unregulated
UNSW : Unswitched

V

V : Vertical, Volt
VACT : Video Action
VCO : Voltage Controlled Oscillator
VD : Vertical Drive
VIF : Video Intermediate Frequency
VLT : Violet
VR : Variable Resistor
VS : Video and Sync
VSCH : Variable Search
VV : Video to Video
VXO : Variable Crystal Oscillator

W

W : Watt
WARN : Warning
W & D : White and Dark
WHT : White
WV : Working Voltage

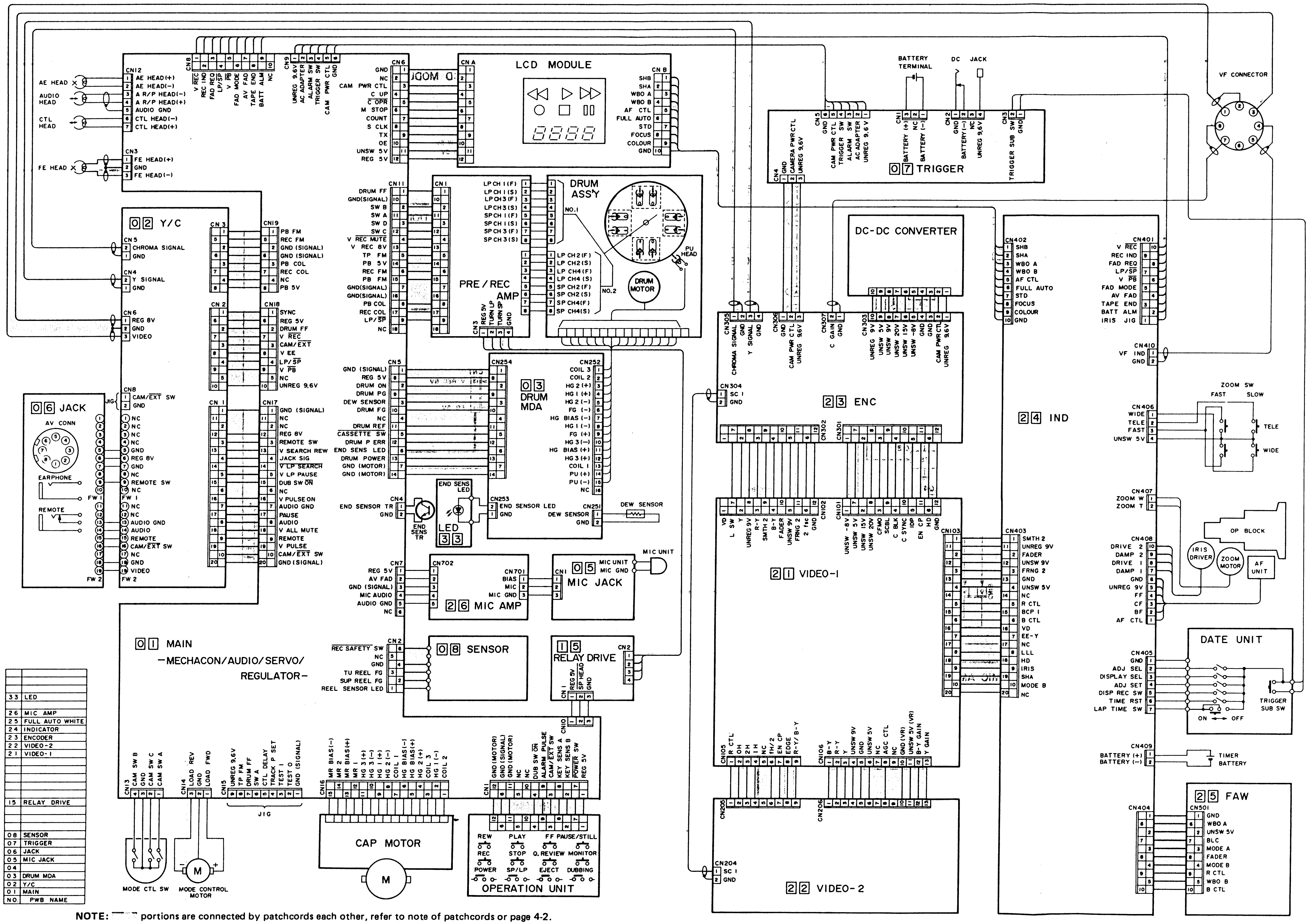
X

XTAL : Crystal

Y

Y : Luminance
YEL : Yellow

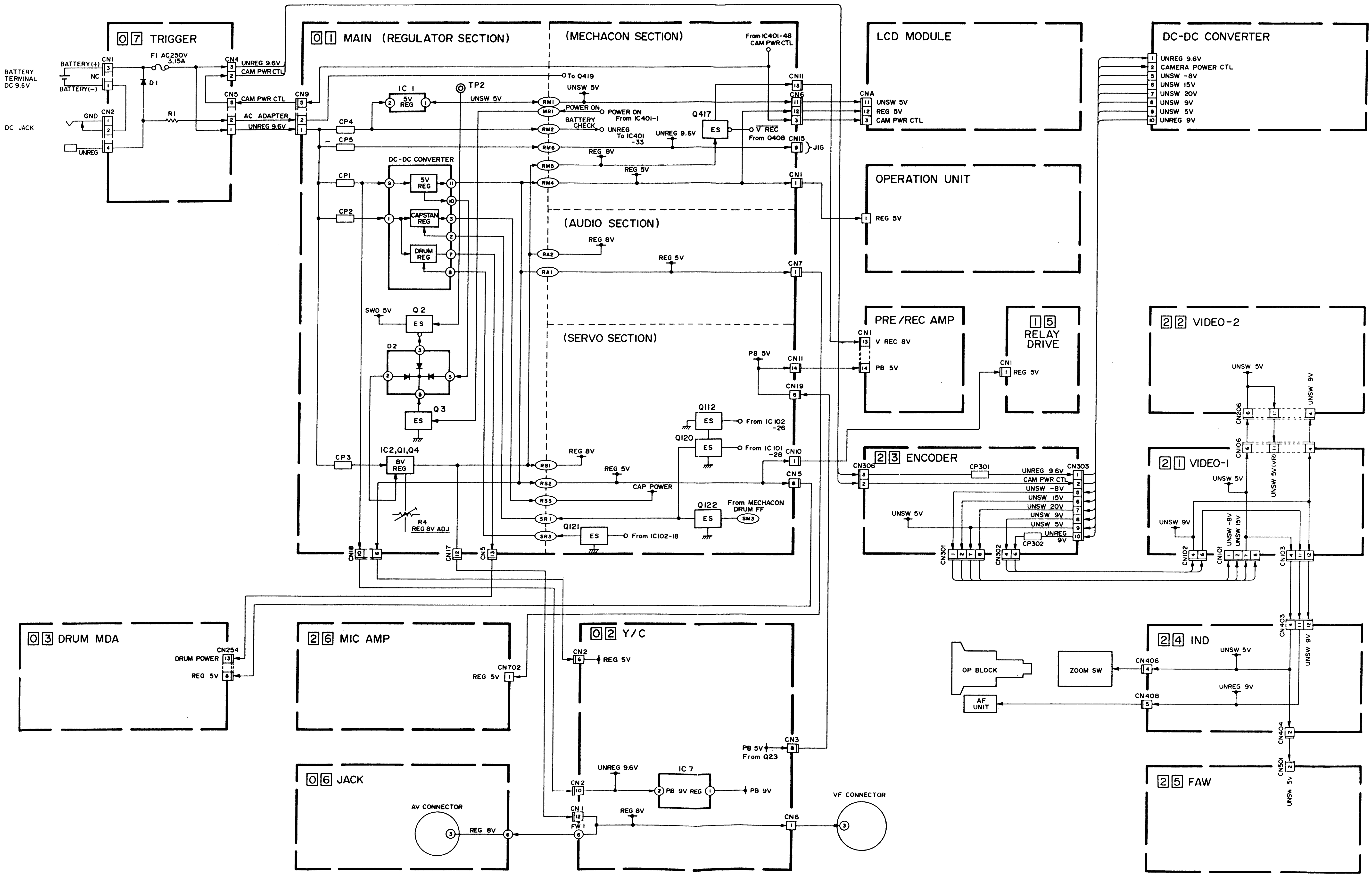
4.5 OVERALL WIRING


AE HEAD
AUDIO HEAD
CTL HEAD
FE HEAD
CN12
AE HEAD(+)
AE HEAD(−)
A R/P HEAD(−)
A R/P HEAD(+)
AUDIO GND
CTL HEAD(−)
CTL HEAD(+)
CN3
FE HEAD(+)
GND
FE HEAD(−)
CN8
V REC
REC IND
FAD REQ
LP/SP
V PB
FAD MODE
AV FAD
TAPE END
BATT ALM
NC
CN9
UNREG 9.6V
AC ADAPTER
ALARM SW
TRIGGER SW
CAM PWR CTL
GND
CN6
GND
NC
CAM PWR CTL
C UP
C OPR
M STOP
COUNT
S CLK
TX
OE
UNSW 5V
REG 5V
CN A
LCD MODULE
CN B
SHB
SHA
WBO A
WBO B
AF CTL
FULL AUTO
STD
FOCUS
COLOUR
GND
02 Y/C
CN5
CHROMA SIGNAL
GND
CN4
Y SIGNAL
GND
CN6
REG 8V
GND
VIDEO
CN8
CAM/EXT SW
GND
JIG
CN 3
CN19
PB FM
REC FM
GND (SIGNAL)
GND (SIGNAL)
PB COL
REC COL
NC
PB 5V
CN 2
CN18
SYNC
REG 5V
DRUM FF
V REC
CAM/EXT
V EE
LP/SP
V PB
NC
UNREG 9.6V
CN I
CN17
GND (SIGNAL)
NC
NC
REG 8V
REMOTE SW
V SEARCH REW
JACK SIG
V LP SEARCH
V LP PAUSE
DUB SW ON
NC
V PULSE ON
AUDIO GND
PAUSE
AUDIO
V ALL MUTE
REMOTE
V PULSE
CAM/EXT SW
GND (SIGNAL)
06 JACK
AV CONN
EARPHONE
REMOTE
FW 1
FW 2
NC
NC
NC
NC
GND
REG 8V
GND
NC
REMOTE SW
NC
NC
NC
AUDIO GND
AUDIO
REMOTE
CAM/EXT SW
NC
GND
VIDEO
CN11
DRUM FF
GND(SIGNAL)
SW B
SW A
SW D
SW C
V REC MUTE
V REC 8V
TP FM
PB 5V
REC FM
PB FM
GND(SIGNAL)
GND(SIGNAL)
PB COL
REC COL
LP/SP
NC
CN I
LP CH 1 (F)
LP CH 1 (S)
LP CH 3 (F)
LP CH 3 (S)
SP CH 1 (F)
SP CH 1 (S)
SP CH 3 (F)
SP CH 3 (S)
PRE / REC AMP
CN3
REG 5V
TURN LP
TURN SP
GND
DRUM ASS'Y
NO. 1
NO. 2
LP CH2 (F)
LP CH2 (S)
LP CH4 (F)
LP CH4 (S)
SP CH2 (F)
SP CH2 (S)
SP CH4 (F)
SP CH4 (S)
DRUM MOTOR
PU HEAD
CN5
GND (SIGNAL)
REG 5V
DRUM ON
DRUM PG
DEW SENSOR
DRUM FG
NC
DRUM REF
CASSETTE SW
DRUM P ERR
END SENS LED
DRUM POWER
GND (MOTOR)
GND (MOTOR)
CN254
03 DRUM MDA
CN252
COIL 3
COIL 2
HG 2 (+)
HG 1 (+)
HG 2 (−)
FG (−)
HG BIAS (−)
HG 1 (−)
FG (+)
HG 3 (−)
HG BIAS (+)
HG 3 (+)
COIL 1
PU (+)
PU (−)
NC
CN4
END SENSOR TR
GND
END SENS TR
END SENS LED
LED
33
CN253
END SENSOR LED
GND
CN251
DEW SENSOR
GND
CN7
REG 5V
AV FAD
GND (SIGNAL)
MIC AUDIO
AUDIO GND
NC
CN702
CN701
BIAS
MIC
MIC GND
26 MIC AMP
CN1
05 MIC JACK
MIC UNIT
MIC GND
MIC UNIT
01 MAIN
−MECHACON/AUDIO/SERVO/REGULATOR−
CN2
REC SAFETY SW
NC
GND
TU REEL FG
SUP REEL FG
REEL SENSOR LED
08 SENSOR
15 RELAY DRIVE
CN2
CN I
REG 9V
SP HEAD
GND
CN10
CN13
CAM SW B
GND
CAM SW C
CAM SW A
CN14
LOAD REV
GND
LOAD FWD
CN15
UNREG 9.6V
TP FM
DRUM FF
SW A
CTL DELAY
TRACK P SET
TEST 1
TEST 0
GND (SIGNAL)
JIG
CN16
MR BIAS (−)
MR 2
MR BIAS (+)
MR 1
HG 3 (+)
HG 3 (−)
HG 1 (+)
HG 2 (−)
COIL 1
HG BIAS (−)
HG BIAS (+)
HG 2 (+)
COIL 3
HG 1 (−)
COIL 2
CN1
GND (MOTOR)
GND (SIGNAL)
GND (MOTOR)
NC
NC
DUB SW ON
ALARM PULSE
CAM/EXT SW
KEY SENS A
KEY SENS B
POWER SW
REG 5V
MODE CTL SW
MODE CONTROL MOTOR
M
CAP MOTOR
M
REW
PLAY
FF PAUSE/STILL
REC
STOP
Q.REVIEW
MONITOR
POWER
SP/LP
EJECT
DUBBING
OPERATION UNIT
BATTERY TERMINAL
DC JACK
CN4
GND
CAMERA PWR CTL
UNREG 9.6V
CN5
GND
CAM PWR CTL
TRIGGER SW
ALARM SW
AC ADAPTER
UNREG 9.6 V
CN1
BATTERY (+)
NC
BATTERY (−)
CN2
GND
BATTERY (−)
NC
UNREG 9.6V
CN3
TRIGGER SUB SW
GND
07 TRIGGER
VF CONNECTOR
DC-DC CONVERTER
CN305
CHROMA SIGNAL
GND
Y SIGNAL
GND
CN306
GND
CAM PWR CTL
UNREG 9.6V
CN307
C GAIN
GND
CN303
UNREG 9V
UNSW 5V
UNSW 9V
UNSW 20V
UNSW 15V
UNSW −8V
GND
GND
CAM PWR CTL
UNREG 9.6V
CN304
SC 1
GND
23 ENC
CN302
CN301
CN102
CN101
VD
L SW
Y
UNREG 9V
R-Y
SMTH 2
B-Y
FADER
UNSW 9V
FRNG 2
2 fsc
GND
UNSW −8V
UNSW 5V
UNSW 15V
UNSW 20V
CFMO
SCBL
C BLK
C SYNC
IDP
EN CP
HD
GND
21 VIDEO-1
CN103
CN105
R CTL
OH
2H
1H
NC
1H/2
EN CP
EDGE
R-Y/B-Y
CN106
B-Y
R-Y
Y
UNSW 9V
GND
UNSW 5V
NC
AGC CTL
NC
GND (VR)
UNSW 5V (VR)
B-Y GAIN
Y GAIN
CN205
CN206
CN204
SC 1
GND
22 VIDEO-2
CN402
SHB
SHA
WBO A
WBO B
AF CTL
FULL AUTO
STD
FOCUS
COLOUR
GND
CN401
V REC
REC IND
FAD REQ
LP/SP
V PB
FAD MODE
AV FAD
TAPE END
BATT ALM
IRIS JIG
24 IND
CN410
VF IND
GND
CN403
SMTH 2
UNREG 9V
FADER
UNSW 9V
FRNG 2
GND
UNSW 5V
NC
R CTL
BCP 1
B CTL
VD
EE-Y
NC
LLL
HD
IRIS
SHA
MODE B
NC
CN406
WIDE
TELE
FAST
UNSW 5V
ZOOM SW
FAST
SLOW
TELE
WIDE
CN407
ZOOM W
ZOOM T
OP BLOCK
CN408
DRIVE 2
DAMP 2
DRIVE 1
DAMP 1
GND
UNREG 9V
FF
CF
BF
AF CTL
IRIS DRIVER
ZOOM MOTOR
AF UNIT
DATE UNIT
CN405
GND
ADJ SEL
DISPLAY SEL
ADJ SET
DISP REC SW
TIME RST
LAP TIME SW
ON
OFF
TRIGGER SUB SW
CN409
BATTERY (+)
BATTERY (−)
TIMER BATTERY
CN404
25 FAW
CN501
GND
WBO A
UNSW 5V
BLC
MODE A
FADER
MODE B
R CTL
WBO B
B CTL

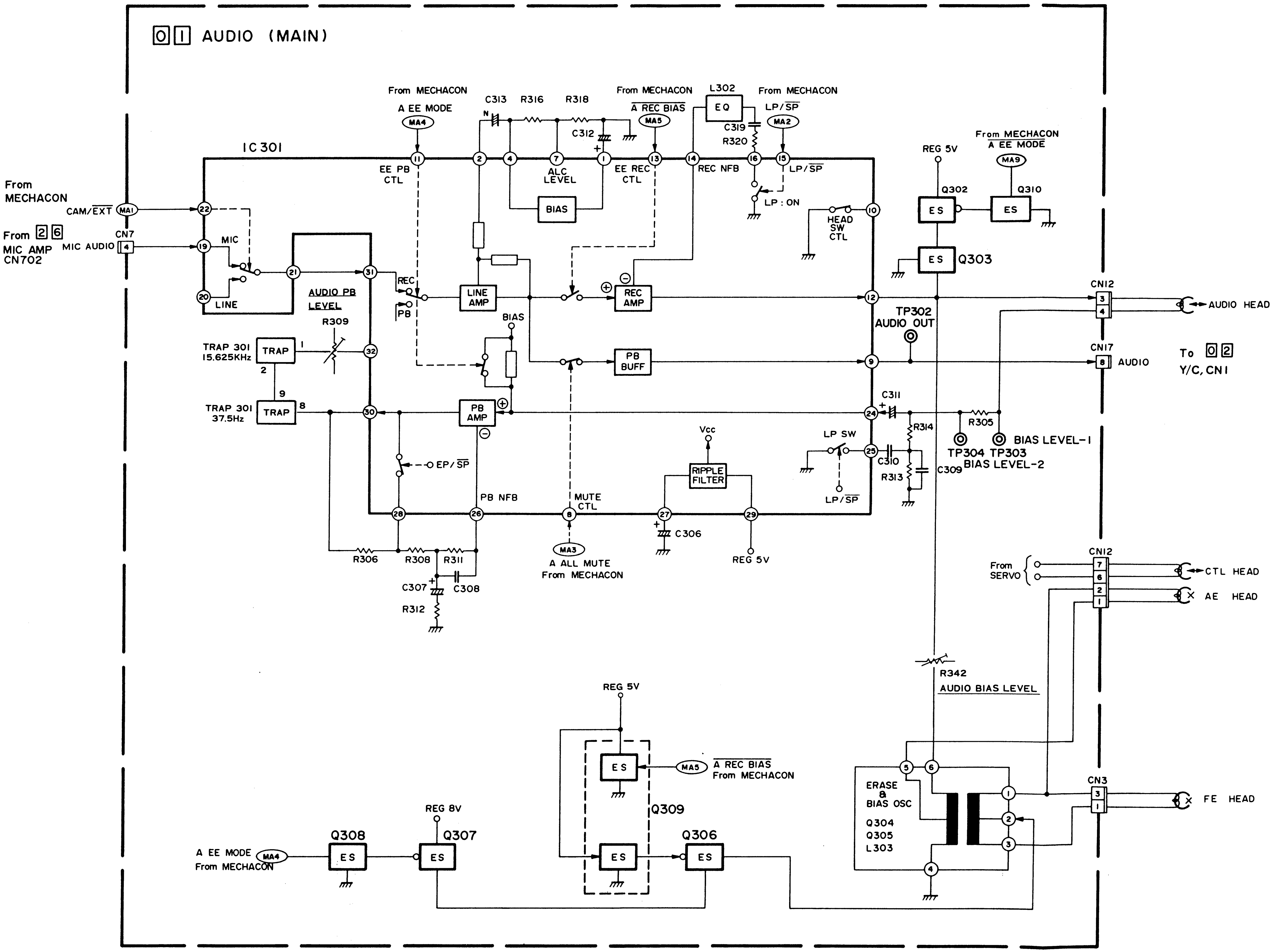
NO.	PWB NAME
33	LED
26	MIC AMP
25	FULL AUTO WHITE
24	INDICATOR
23	ENCODER
22	VIDEO-2
21	VIDEO-1
15	RELAY DRIVE
08	SENSOR
07	TRIGGER
06	JACK
05	MIC JACK
04	
03	DRUM MDA
02	Y/C
01	MAIN

NOTE: ⌐¬ portions are connected by patchcords each other, refer to note of patchcords or page 4-2.

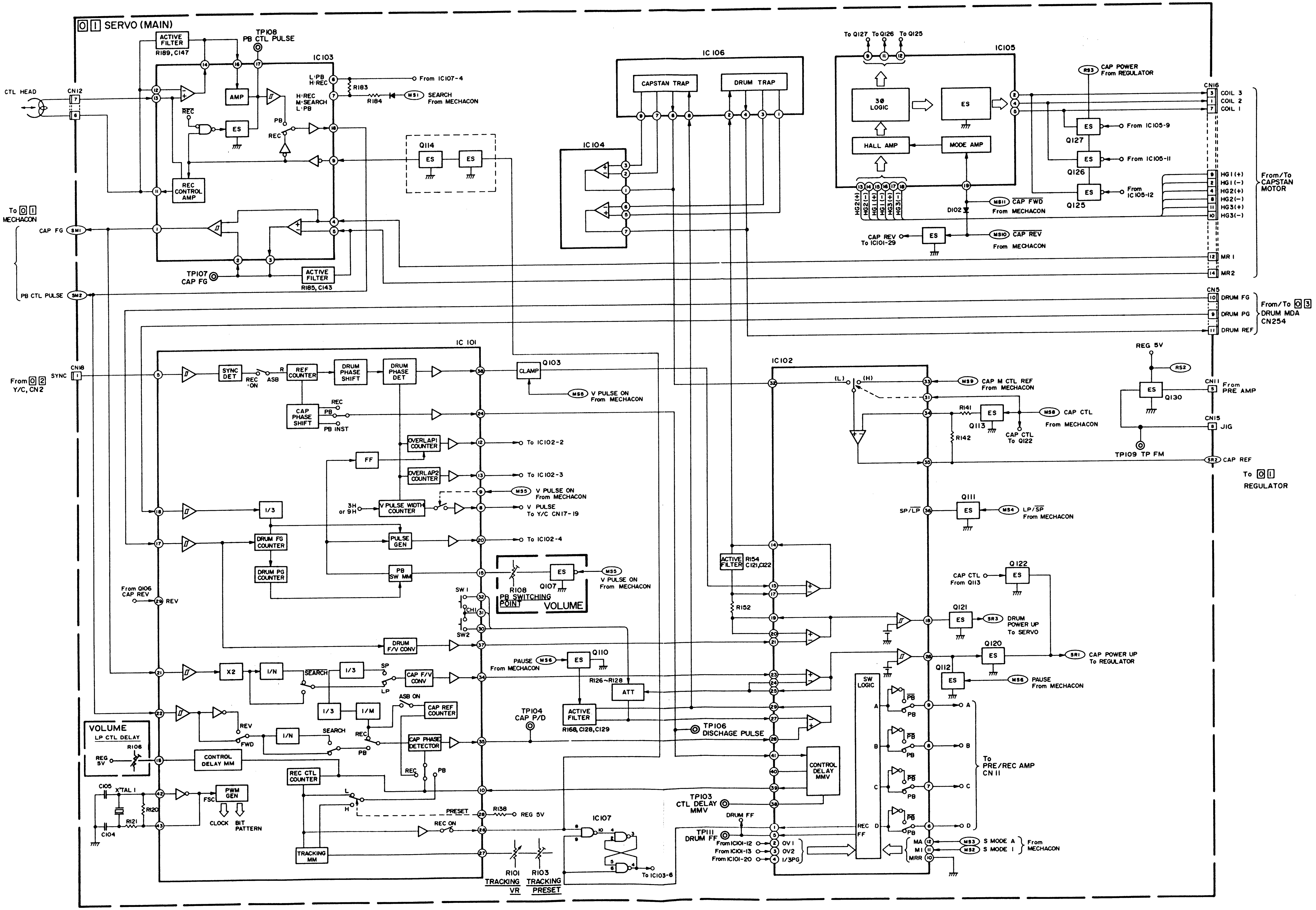
4.6 POWER SYSTEM BLOCK DIAGRAM


07 TRIGGER
BATTERY TERMINAL DC 9.6V
BATTERY (+)
NC
BATTERY (−)
DC JACK
GND
UNREG
CN1
CN2
F1 AC250V 3.15A
D1
R1
CN4
CN5
UNREG 9.6V
CAM PWR CTL
AC ADAPTER
01 MAIN (REGULATOR SECTION)
(MECHACON SECTION)
(AUDIO SECTION)
(SERVO SECTION)
CN9
IC 1
5V REG
TP2
UNSW 5V
CP4
CP5
CP1
CP2
CP3
DC-DC CONVERTER
5V REG
CAPSTAN REG
DRUM REG
SWD 5V
Q2
ES
D2
Q3
IC2,Q1,Q4
8V REG
R4
REG 8V ADJ
To Q419
POWER ON
POWER ON From IC401-1
BATTERY CHECK
UNREG To IC401-33
UNREG 9.6V
Q417
V REC From Q408
From IC401-48 CAM PWR CTL
REG 8V
REG 5V
JIG
CN11
CN6
CN15
CN1
CN7
PB 5V
CN19
Q112
Q120
From IC102-26
From IC101-28
CN10
CN5
CAP POWER
Q122
From MECHACON DRUM FF
Q121
From IC102-18
RM1
MR1
RM2
RM6
RM5
RM4
RA2
RA1
RS1
RS2
RS3
SR1
SR3
SM3
CN18
CN17
LCD MODULE
CNA
UNSW 5V
REG 5V
CAM PWR CTL
OPERATION UNIT
PRE/REC AMP
V REC 8V
PB 5V
15 RELAY DRIVE
DC-DC CONVERTER
UNREG 9.6V
CAMERA POWER CTL
UNSW −8V
UNSW 15V
UNSW 20V
UNSW 9V
UNREG 9V
22 VIDEO-2
21 VIDEO-1
UNSW 5V(VR)
CN206
CN106
CN102
CN101
CN103
23 ENCODER
CN306
CN303
CP301
CP302
CN301
CN302
24 IND
CN403
CN406
CN408
CN404
CN501
OP BLOCK
AF UNIT
ZOOM SW
25 FAW
03 DRUM MDA
CN254
DRUM POWER
26 MIC AMP
CN702
02 Y/C
CN3
PB 5V From Q23
IC 7
PB 9V REG
PB 9V
FW1
VF CONNECTOR
06 JACK
AV CONNECTOR
REG 8V

4.7 AUDIO BLOCK DIAGRAM

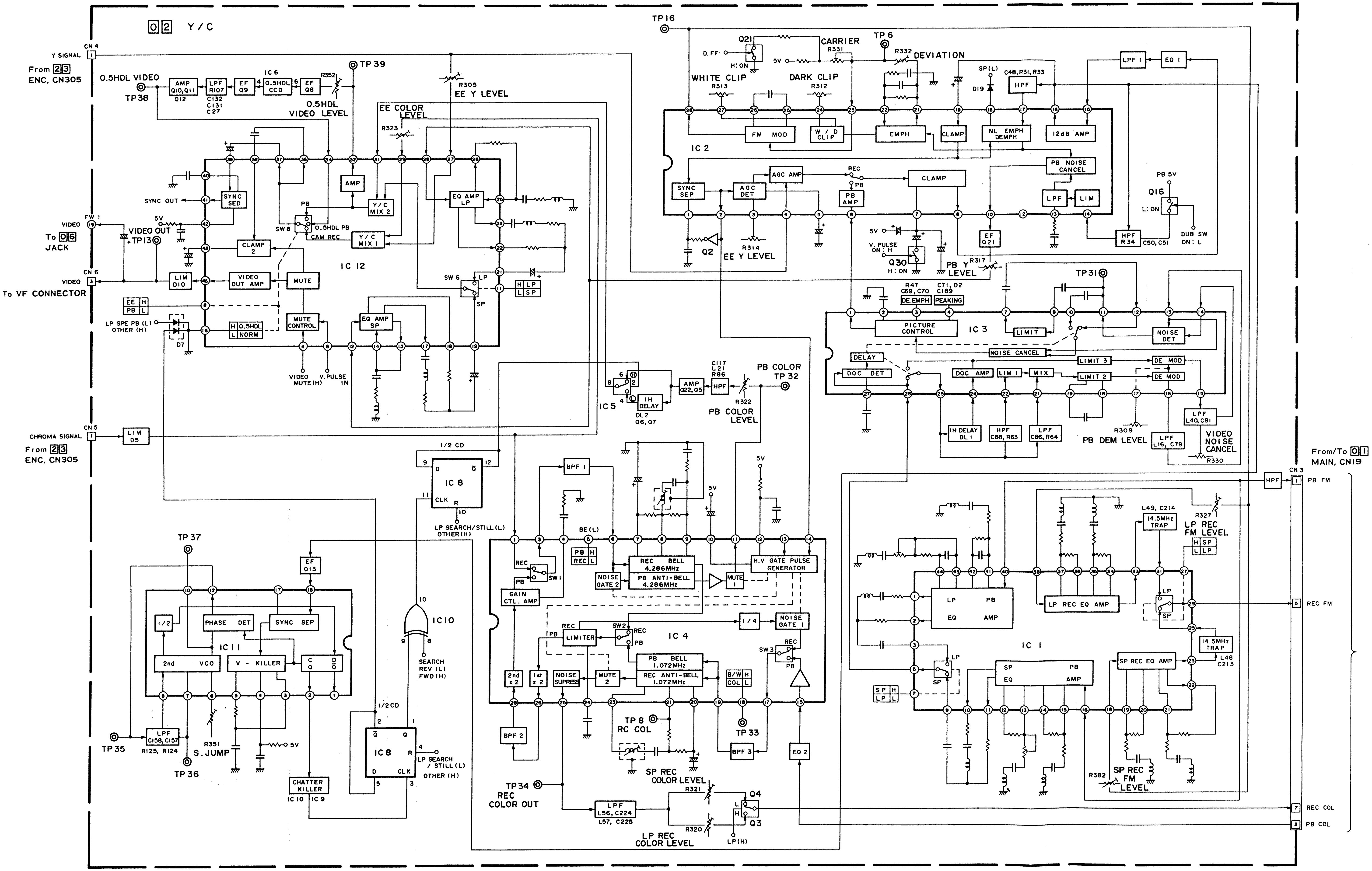

01 AUDIO (MAIN)
IC301
From MECHACON
CAM/EXT
MA1
From 26
MIC AMP
CN702
MIC AUDIO
CN7
4
MIC
LINE
AUDIO PB LEVEL
REC
PB
R309
TRAP 301 15.625KHz
TRAP
TRAP 301 37.5Hz
TRAP
From MECHACON
A EE MODE
MA4
EE PB CTL
C313
R316
R318
C312
ALC LEVEL
BIAS
LINE AMP
BIAS
PB AMP
EP/SP
PB NFB
R306
R308
R311
C307
C308
R312
From MECHACON
A REC BIAS
MA5
EE REC CTL
REC AMP
PB BUFF
MUTE CTL
MA3
A ALL MUTE
From MECHACON
L302
EQ
C319
R320
From MECHACON
LP/SP
MA2
REC NFB
LP/SP
LP : ON
HEAD SW CTL
Vcc
RIPPLE FILTER
C306
REG 5V
LP SW
LP/SP
C310
R313
C309
R314
C311
R305
TP304 TP303
BIAS LEVEL-1
BIAS LEVEL-2
REG 5V
Q302
ES
From MECHACON
A EE MODE
MA9
Q310
ES
ES
Q303
TP302
AUDIO OUT
CN12
AUDIO HEAD
CN17
AUDIO
To 02
Y/C, CN1
CN12
From SERVO
CTL HEAD
AE HEAD
R342
AUDIO BIAS LEVEL
ERASE & BIAS OSC
Q304
Q305
L303
CN3
FE HEAD
REG 5V
ES
MA5
A REC BIAS
From MECHACON
Q309
ES
Q306
ES
REG 8V
Q307
ES
Q308
ES
A EE MODE
From MECHACON
MA4

4.8 SERVO BLOCK DIAGRAM

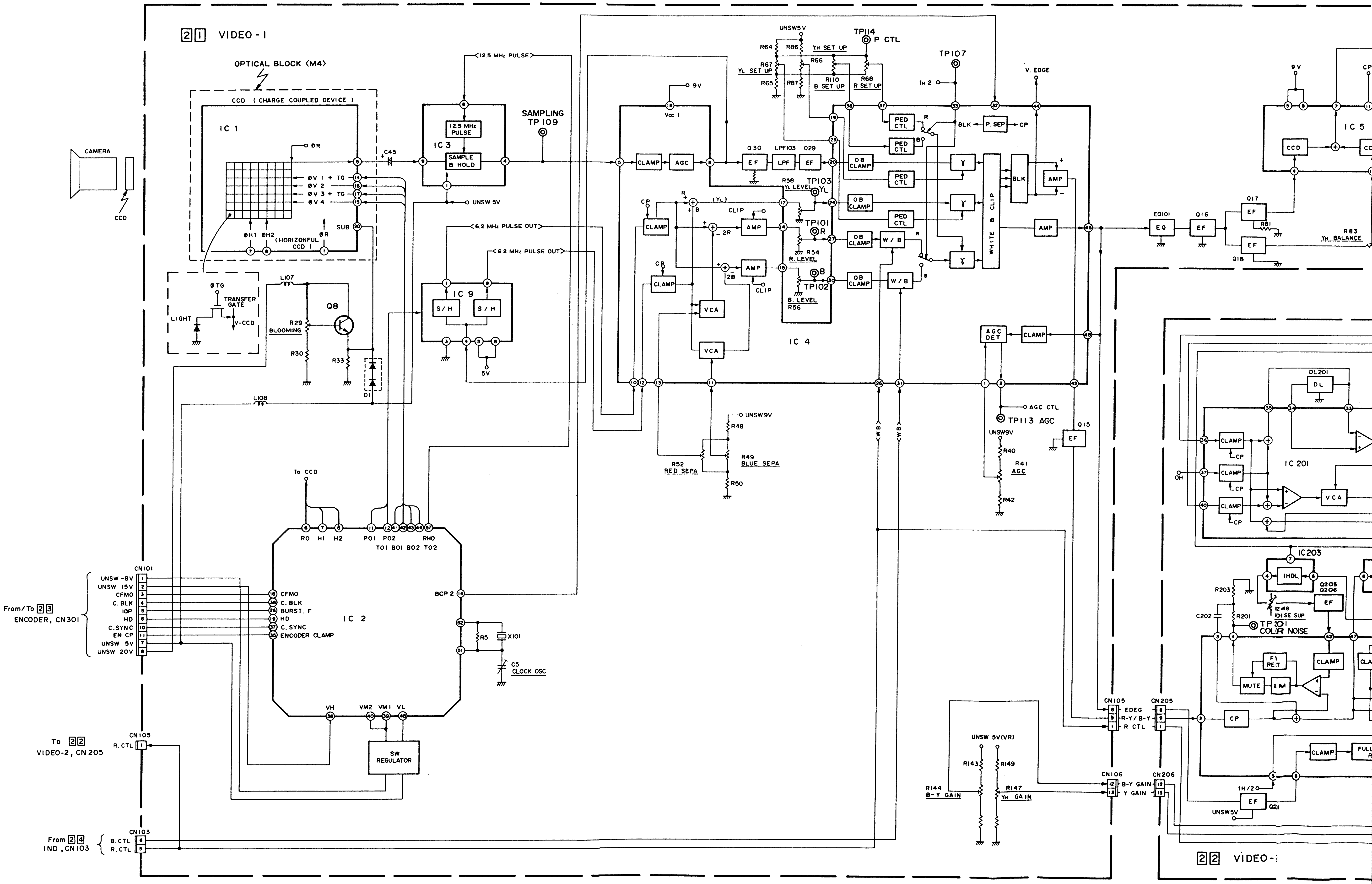


01 SERVO (MAIN)
ACTIVE FILTER
R189, C147
TP108
PB CTL PULSE
IC103
CTL HEAD
CN12
L·PB
H·REC
R183
From IC107-4
H·REC
M·SEARCH
L·PB
R184
MS1
SEARCH
From MECHACON
AMP
REC
ES
PB
REC
REC CONTROL AMP
Q114
ES
ES
To 01 MECHACON
CAP FG
SM1
TP107
CAP FG
ACTIVE FILTER
R185, C143
PB CTL PULSE
SM2
IC106
CAPSTAN TRAP
DRUM TRAP
IC104
To Q127
To Q126
To Q125
IC105
3Ø LOGIC
ES
HALL AMP
MODE AMP
HG2(+)
HG2(-)
HG1(+)
HG1(-)
HG3(+)
HG3(-)
D102
MS11
CAP FWD
From MECHACON
CAP REV
To IC101-29
ES
MS10
CAP REV
From MECHACON
R93
CAP POWER
From REGULATOR
ES
From IC105-9
Q127
ES
From IC105-11
Q126
ES
From IC105-12
Q125
CN16
COIL 3
COIL 2
COIL 1
HG1(+)
HG1(-)
HG2(+)
HG2(-)
HG3(+)
HG3(-)
MR1
MR2
From/To CAPSTAN MOTOR
CN5
DRUM FG
DRUM PG
DRUM REF
From/To 03 DRUM MDA CN254
IC101
CN18
SYNC
From 02 Y/C, CN2
SYNC DET
REC ·ON
ASB
R
REF COUNTER
DRUM PHASE SHIFT
DRUM PHASE DET
CAP PHASE SHIFT
REC
PB
PB INST
OVERLAP1 COUNTER
To IC102-2
FF
OVERLAP2 COUNTER
To IC102-3
MS5
V PULSE ON
From MECHACON
1/3
3H or 9H
V PULSE WIDTH COUNTER
V PULSE
To Y/C CN17-19
DRUM FG COUNTER
PULSE GEN
To IC102-4
DRUM PG COUNTER
PB SW MM
R108
PB SWITCHING POINT
VOLUME
Q107
ES
MS5
V PULSE ON
From MECHACON
From Q106
CAP REV
REV
SW1
CH1
SW2
DRUM F/V CONV
PAUSE
MS6
From MECHACON
ES
Q110
R126~R128
ATT
X2
1/N
SEARCH
1/3
SP
LP
CAP F/V CONV
ASB ON
1/3
1/M
CAP REF COUNTER
TP104
CAP P/D
ACTIVE FILTER
R168, C128, C129
REV
FWD
1/N
SEARCH
REC
PB
CAP PHASE DETECTOR
VOLUME
LP CTL DELAY
R106
REG 5V
CONTROL DELAY MM
REC CTL COUNTER
REC
PB
C105
X'TAL 1
R120
R121
C104
PWM GEN
FSC
CLOCK
BIT PATTERN
L
H
PRESET
R138
REG 5V
REC ON
TRACKING MM
IC107
To IC103-6
R101
TRACKING VR
R103
TRACKING PRESET
Q103
CLAMP
MS6
V PULSE ON
From MECHACON
IC102
(L)
(H)
MS9
CAP M CTL REF
From MECHACON
R141
ES
Q113
MS8
CAP CTL
From MECHACON
CAP CTL
To Q122
R142
REG 5V
RS2
ES
Q130
CN11
From PRE AMP
CN15
JIG
TP109 TP FM
SR2
CAP REF
To 01 REGULATOR
Q111
SP/LP
ES
MS4
LP/SP
From MECHACON
ACTIVE FILTER
R154
C121, C122
R152
CAP CTL
From Q113
Q122
ES
Q121
ES
SR3
DRUM POWER UP
To SERVO
Q120
ES
SR1
CAP POWER UP
To REGULATOR
Q112
ES
MS6
PAUSE
From MECHACON
TP106
DISCHAGE PULSE
SW LOGIC
A
B
C
D
PB
PB
To PRE/REC AMP CN11
CONTROL DELAY MMV
TP103
CTL DELAY MMV
DRUM FF
TP111
DRUM FF
REC
FF
From IC101-12
From IC101-13
From IC101-20
OV1
OV2
1/3PG
MA
MI
MRR
MS3
S MODE A
MS2
S MODE I
From MECHACON

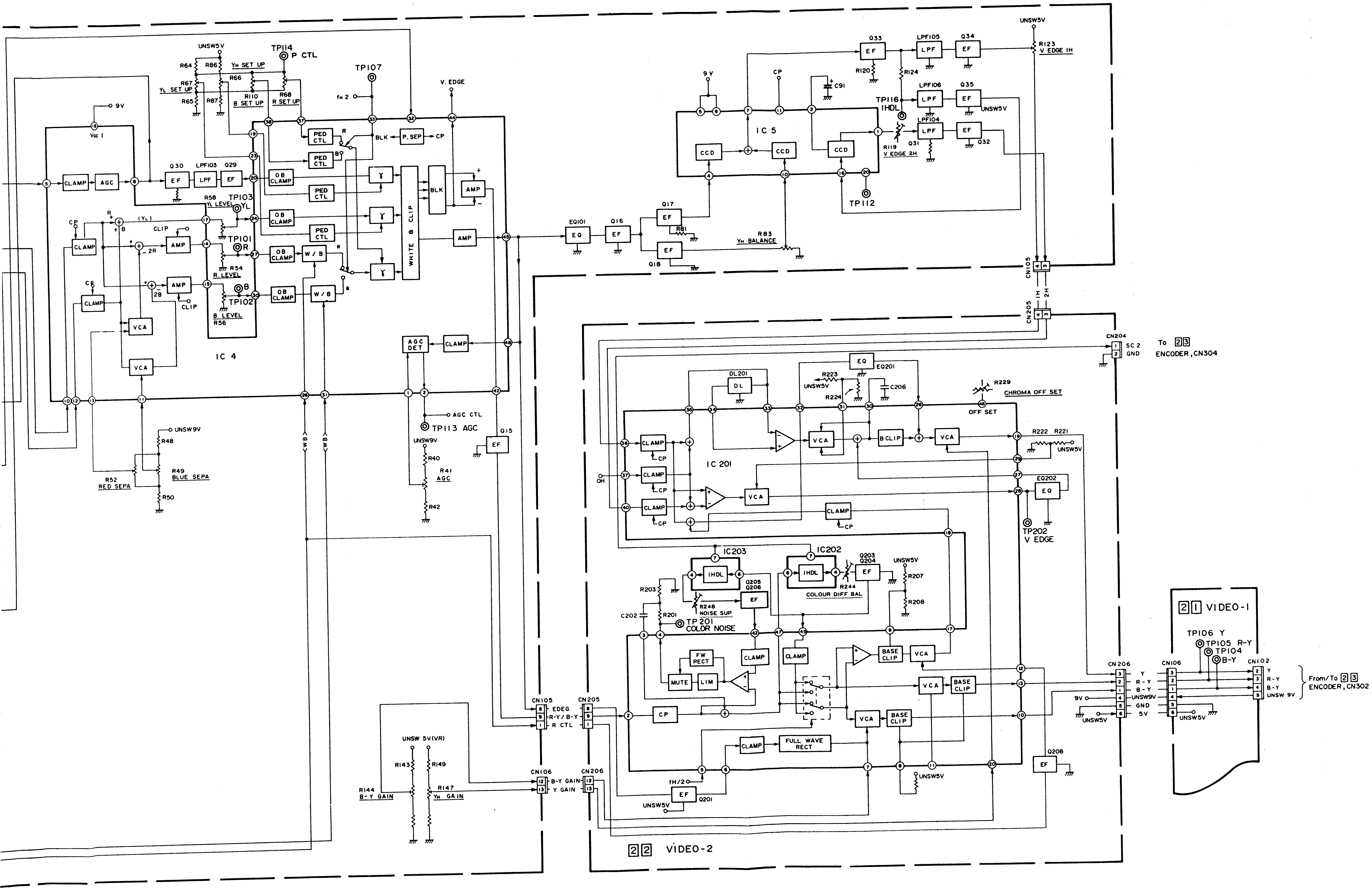
4.9 Y/C BLOCK DIAGRAM


02 Y/C
Y SIGNAL
CN 4
From 23 ENC, CN305
0.5HDL VIDEO
TP38
AMP Q10, Q11
Q12
LPF R107
C132 C131 C27
EF Q9
IC 6
0.5HDL CCD
EF Q8
R352
TP39
0.5HDL VIDEO LEVEL
R305
EE Y LEVEL
EE COLOR LEVEL
R323
AMP
SYNC SED
SYNC OUT
VIDEO
FW 1
To 06 JACK
VIDEO OUT
TP13
5V
CLAMP 2
SW 8
PB
0.5HDL PB
CAM REC
Y/C MIX 2
Y/C MIX 1
EQ AMP LP
IC 12
VIDEO OUT AMP
MUTE
LIM D10
CN 6
To VF CONNECTOR
EE H
PB L
LP SPE PB (L)
OTHER (H)
D7
H 0.5HDL
L NORM
MUTE CONTROL
EQ AMP SP
SW 6
LP
SP
H LP
L SP
VIDEO MUTE (H)
V. PULSE IN
CHROMA SIGNAL
CN 5
LIM D5
From 23 ENC, CN305
1/2 CD
IC 8
D
CLK
R
LP SEARCH/STILL (L)
OTHER (H)
TP 37
EF Q13
1/2
PHASE DET
SYNC SEP
IC 11
2nd VCO
V - KILLER
C
Q
IC 10
SEARCH REV (L) FWD (H)
TP35
LPF C158, C157
R125, R124
R351
S. JUMP
TP36
CHATTER KILLER
IC10 IC9
1/2CD
LP SEARCH / STILL (L)
OTHER (H)
TP 16
Q21
D. FF
H: ON
CARRIER
R331
TP 6
R332
DEVIATION
WHITE CLIP
R313
DARK CLIP
R312
SP(L)
D19
C48, R31, R33
HPF
LPF I
EQ I
FM MOD
W/D CLIP
EMPH
CLAMP
NL EMPH DEMPH
12dB AMP
IC 2
SYNC SEP
AGC DET
AGC AMP
REC
PB
PB AMP
CLAMP
PB NOISE CANCEL
LPF
LIM
PB 5V
Q16
L: ON
DUB SW ON: L
Q2
R314
EE Y LEVEL
V. PULSE ON: H
Q30
H: ON
EF Q21
PB Y LEVEL
R317
HPF R34
C50, C51
TP31
R47 C69, C70
C71, D2 C189
DE.EMPH
PEAKING
PICTURE CONTROL
IC 3
LIMIT
NOISE DET
NOISE CANCEL
DELAY
LIMIT 3
DE MOD
DOC DET
DOC AMP
LIM 1
MIX
LIMIT 2
1H DELAY DL1
HPF C88, R63
LPF C86, R64
R309
PB DEM LEVEL
LPF L16, C79
LPF L40, C81
VIDEO NOISE CANCEL
R330
IC 5
1H DELAY
DL2 Q6, Q7
C117 L21 R86
AMP Q22, Q5
HPF
R322
PB COLOR TP 32
PB COLOR LEVEL
BPF 1
BE(L)
PB H
REC L
REC
SW1
GAIN CTL. AMP
NOISE GATE 2
REC BELL 4.286MHz
PB ANTI-BELL 4.286MHz
MUTE 1
H.V GATE PULSE GENERATOR
5V
IC 4
LIMITER
SW2
1/4
NOISE GATE 1
SW3
PB BELL 1.072MHz
REC ANTI-BELL 1.072MHz
2nd x 2
1st x 2
NOISE SUPRESS
MUTE 2
B/W H
COL L
BPF 2
TP 8
RC COL
TP 33
BPF 3
EQ 2
SP REC COLOR LEVEL
R321
Q4
Q3
R320
LP(H)
TP34
REC COLOR OUT
LPF L56, C224 L57, C225
LP REC COLOR LEVEL
From/To 01 MAIN, CN19
CN 3
PB FM
REC FM
REC COL
PB COL
L49, C214
14.5MHz TRAP
R327
LP REC FM LEVEL
H SP
L LP
LP EQ
PB AMP
LP REC EQ AMP
IC 1
SP EQ
PB AMP
SP REC EQ AMP
14.5MHz TRAP
L48 C213
SP H
LP L
R382
SP REC FM LEVEL

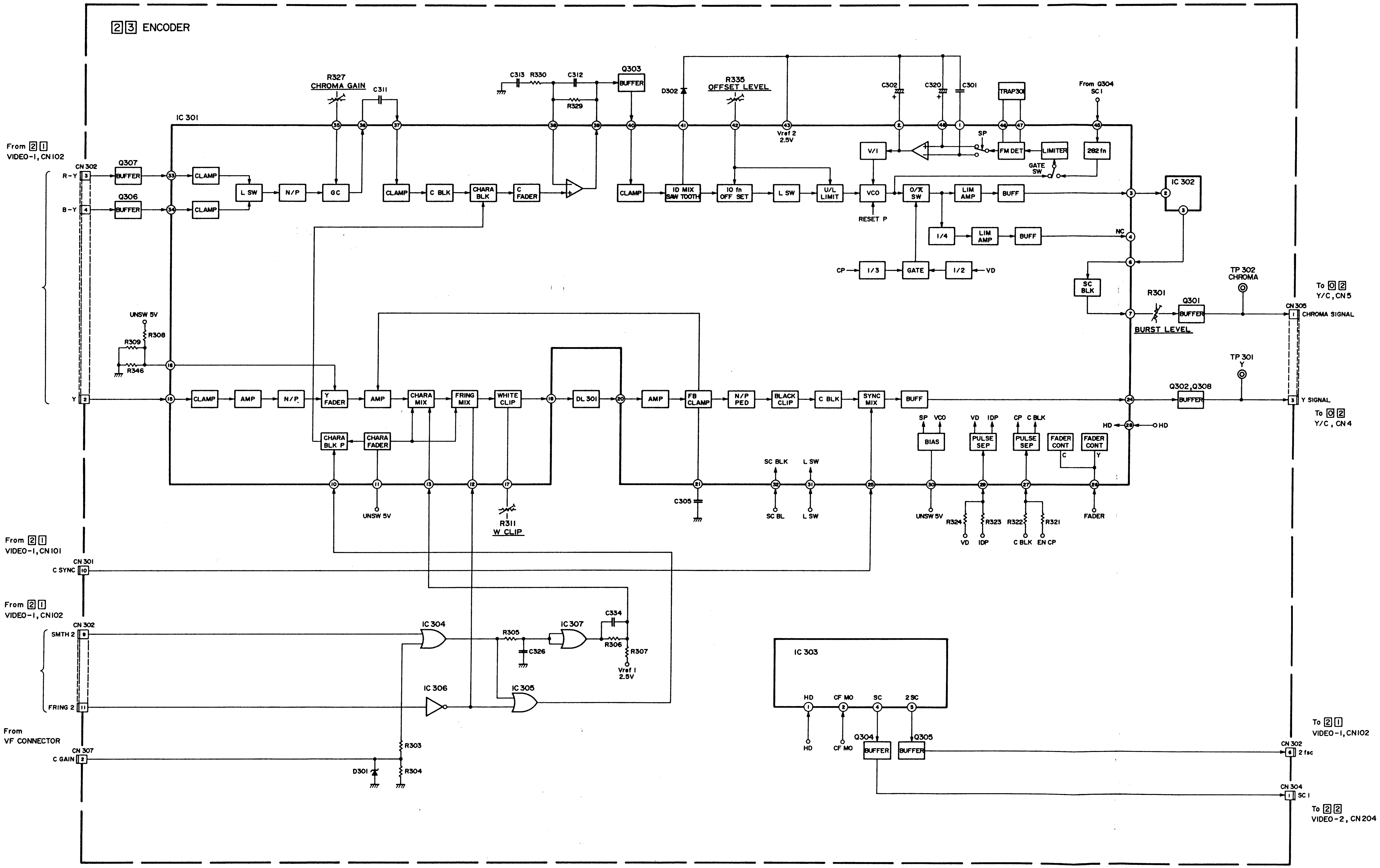
4.10 VIDEO BLOCK DIAGRAM



2 1 VIDEO - I
OPTICAL BLOCK (M4)
CCD (CHARGE COUPLED DEVICE)
IC 1
CAMERA
CCD
ØR
ØV 1 + TG
ØV 2
ØV 3 + TG
ØV 4
ØH1 ØH2 (HORIZONFUL CCD)
SUB
ØTG
TRANSFER GATE
LIGHT
V-CCD
C45
12.5 MHz PULSE
IC 3
12.5 MHz PULSE
SAMPLE & HOLD
UNSW 5V
SAMPLING TP 109
6.2 MHz PULSE OUT
6.2 MHz PULSE OUT
IC 9
S/H
S/H
5V
L107
Q8
R29 BLOOMING
R30
R33
D1
L108
9V
Vcc 1
CLAMP
AGC
Q30
LPF103
Q29
EF
LPF
EF
UNSW5V
R64
R86
YH SET UP
R66
R67
YL SET UP
R65
R87
R110 B SET UP
R68 R SET UP
TP114 P CTL
TP107
fH 2
V. EDGE
PED CTL
PED CTL
PED CTL
PED CTL
OB CLAMP
OB CLAMP
OB CLAMP
OB CLAMP
BLK
P. SEP
CP
γ
WHITE & CLIP
BLK
AMP
AMP
W/B
W/B
R58 YL LEVEL
TP103 YL
TP101 R
R54 R. LEVEL
TP102 B
B. LEVEL R56
(YL)
CLIP
AMP
AMP
CLIP
2R
2B
VCA
VCA
IC 4
AGC DET
CLAMP
AGC CTL
TP113 AGC
UNSW9V
R40
R41 AGC
R42
Q15
EF
UNSW9V
R48
R49 BLUE SEPA
R52 RED SEPA
R50
WB
WB
EQ101
Q16
EQ
EF
Q17
EF
R81
EF
Q18
R83 YH BALANCE
9V
IC 5
CCD
To CCD
RO
H1
H2
PO1
PO2
RHO
TO1 BO1 BO2 TO2
IC 2
CFMO
C. BLK
BURST. F
HD
C. SYNC
ENCODER CLAMP
BCP 2
R5
X101
C5 CLOCK OSC
VH
VM2
VM1
VL
SW REGULATOR
CN101
UNSW -8V
UNSW 15V
CFMO
C. BLK
IDP
HD
C. SYNC
EN CP
UNSW 5V
UNSW 20V
From/To 2 3 ENCODER, CN301
CN105
R. CTL
To 2 2 VIDEO-2, CN205
CN103
B. CTL
R. CTL
From 2 4 IND, CN103
UNSW 5V(VR)
R143
R149
R144 B-Y GAIN
R147 YH GAIN
CN105
EDEG
R-Y/B-Y
R CTL
CN205
CN106
B-Y GAIN
Y GAIN
CN206
DL201
DL
CLAMP
CLAMP
CLAMP
CP
CP
CP
IC 201
VCA
OH
IC203
IHDL
Q205 Q206
R203
R201
C202
1248 NOISE SUP
EF
TP201 COLOR NOISE
F1 REIT
MUTE
LIM
CLAMP
CP
CLAMP
fH/2
EF
Q21
UNSW5V
2 2 VIDEO-2

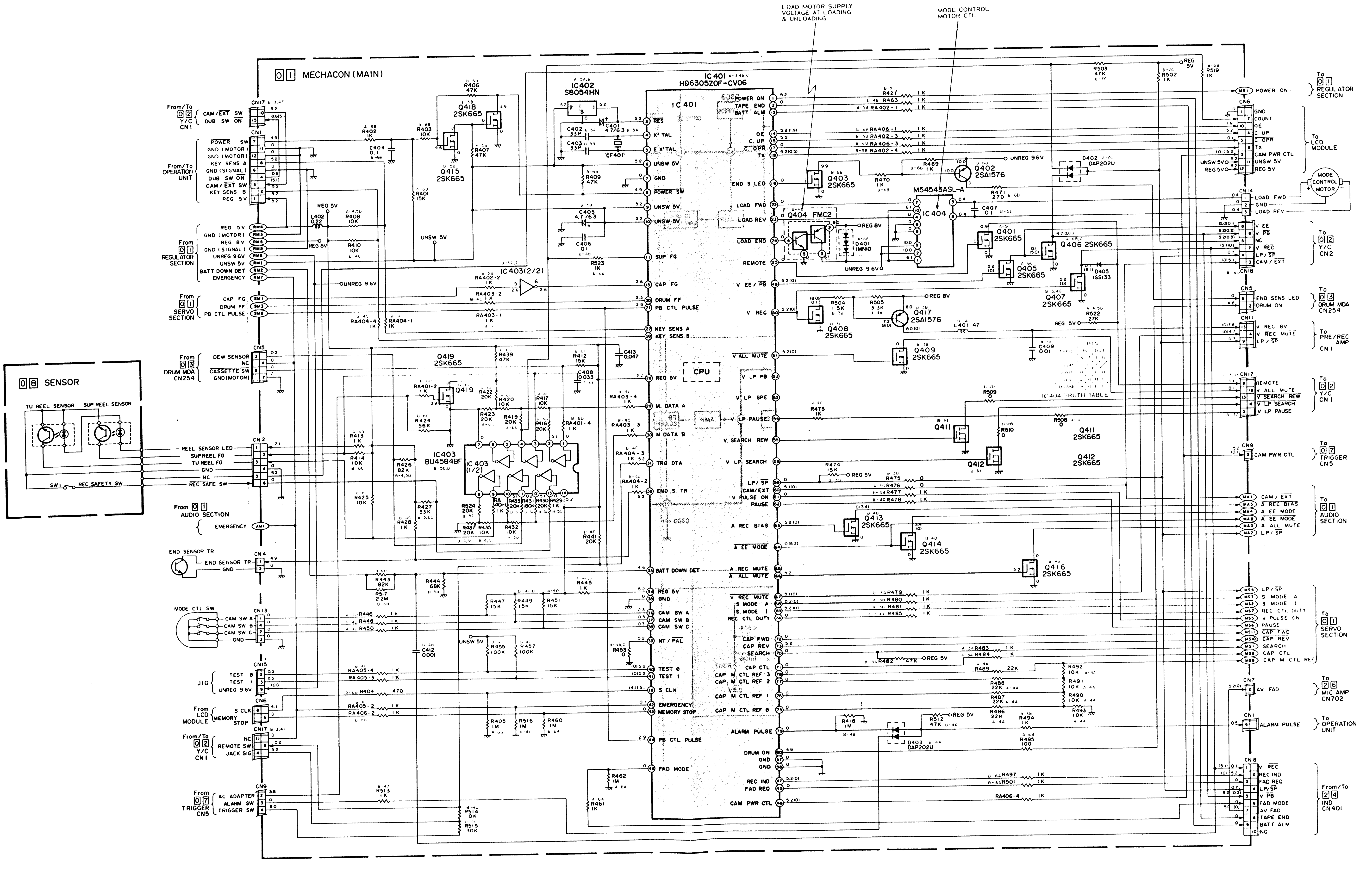

UNSW5V
TP114 P CTL
YH SET UP
R64
R86
R66
R67
YL SET UP
R65
R87
R110
B SET UP
R68
R SET UP
TP107
fH 2
V. EDGE
9V
Vcc 1
CLAMP
AGC
Q30
LPF103
Q29
EF
LPF
OB CLAMP
PED CTL
P. SEP
BLK
CP
WHITE & CLIP
AMP
R58
YL LEVEL
TP103 YL
(YL)
CLIP
TP101 R
R54
R LEVEL
TP102
B LEVEL
R56
W/B
VCA
IC 4
AGC DET
AGC CTL
TP113 AGC
UNSW9V
R40
R41
AGC
R42
Q15
R48
R49
BLUE SEPA
R52
RED SEPA
R50
WB
EQ101
EQ
Q16
Q17
R81
R83
YH BALANCE
Q18
9 V
IC 5
CCD
C91
Q33
LPF105
Q34
R120
R124
LPF106
Q35
TP116
1HDL
LPF104
Q31
Q32
R119
V EDGE 2H
TP112
R123
V EDGE 1H
CN105
CN205
1H
2H
CN204
SC 2
GND
To 23 ENCODER, CN304
EQ201
R223
R224
C206
DL201
DL
R229
CHROMA OFF SET
OFF SET
IC 201
B.CLIP
R222
R221
EQ202
TP202 V EDGE
0H
IC203
IC202
1HDL
Q203 Q204
R244
COLOUR DIFF BAL
R207
R208
R203
Q205 Q206
R248
NOISE SUP
C202
R201
TP 201 COLOR NOISE
FW RECT
MUTE
LIM
BASE CLIP
FULL WAVE RECT
CN105
EDEG
R-Y/B-Y
R CTL
CN205
UNSW 5V(VR)
R143
R149
R144
B-Y GAIN
R147
YH GAIN
CN106
CN206
Y GAIN
fH/2
Q201
Q208
21 VIDEO-1
TP106 Y
TP105 R-Y
TP104
B-Y
CN206
CN106
CN102
Y
R - Y
B - Y
UNSW9V
GND
5V
UNSW 9V
From/To 23 ENCODER, CN302
22 VIDEO-2

4.11 ENCODER BLOCK DIAGRAM

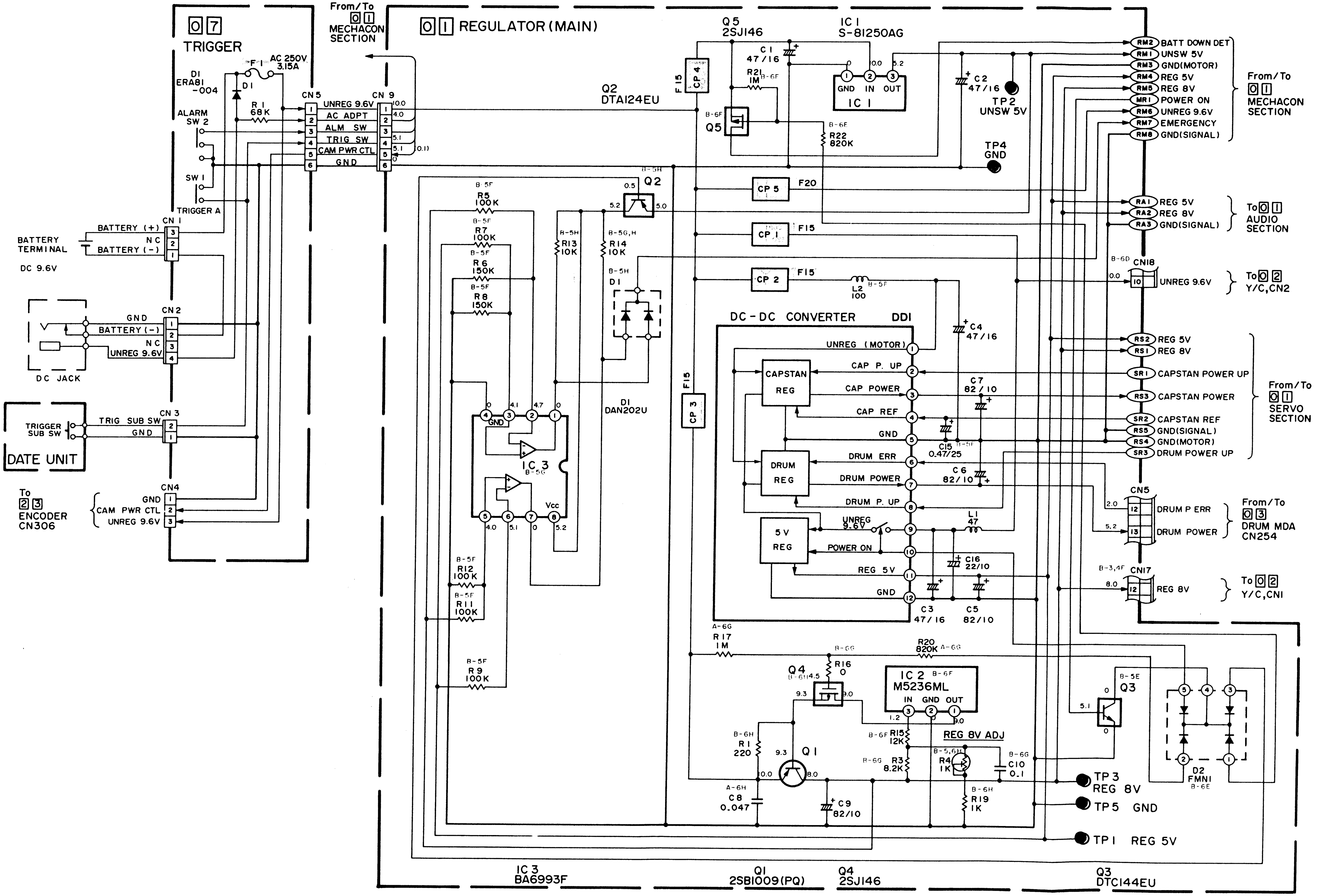


23 ENCODER
IC 301
From 21 VIDEO-1, CN102
CN 302
R-Y
B-Y
Y
Q307 BUFFER
Q306 BUFFER
CLAMP
L SW
N/P
GC
R327 CHROMA GAIN
C311
C BLK
CHARA BLK
C FADER
C313 R330 C312
R329
Q303 BUFFER
D302
R335 OFFSET LEVEL
ID MIX SAW TOOTH
10 fn OFF SET
U/L LIMIT
Vref 2 2.5V
C302 C320 C301
TRAP301
From Q304 SC I
V/I
SP
FM DET
LIMITER
2fn
GATE SW
VCO
RESET P
0/π SW
LIM AMP
BUFF
1/4
NC
IC 302
CP
1/3
GATE
1/2
VD
SC BLK
R301
BURST LEVEL
Q301 BUFFER
TP 302 CHROMA
CN 305
CHROMA SIGNAL
To 02 Y/C, CN5
UNSW 5V
R308
R309
R346
AMP
Y FADER
CHARA MIX
FRING MIX
WHITE CLIP
DL 301
FB CLAMP
N/P PED
BLACK CLIP
SYNC MIX
TP 301 Y
Q302, Q308 BUFFER
Y SIGNAL
To 02 Y/C, CN4
HD
CHARA BLK P
CHARA FADER
SP VCO
BIAS
VD IDP
PULSE SEP
CP C BLK
FADER CONT C
FADER CONT Y
SC BLK
L SW
SC BL
C305
R311 W CLIP
R324 R323 R322 R321
VD IDP C BLK EN CP
FADER
From 21 VIDEO-1, CN101
CN 301
C SYNC
From 21 VIDEO-1, CN102
SMTH 2
FRING 2
IC 304
R305
C326
IC 307
C334
R306
R307
Vref I 2.5V
IC 306
IC 305
From VF CONNECTOR
CN 307
C GAIN
D301
R303
R304
IC 303
HD
CF MO
SC
2SC
Q304 BUFFER
Q305 BUFFER
To 21 VIDEO-1, CN102
CN 302
2fsc
CN 304
SC I
To 22 VIDEO-2, CN204

4.12 MECHACON SCHEMATIC DIAGRAM

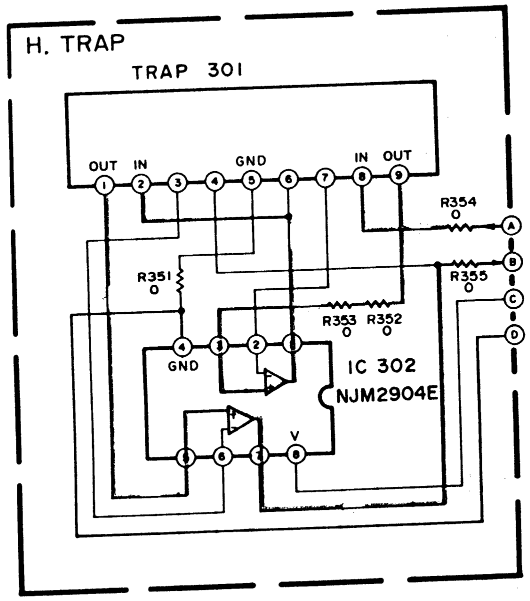

LOAD MOTOR SUPPLY VOLTAGE AT LOADING & UNLOADING
MODE CONTROL MOTOR CTL
01 MECHACON (MAIN)
08 SENSOR
TU REEL SENSOR
SUP REEL SENSOR
SW1
REC SAFETY SW
IC401 HD6305Z0F-CV06
CPU
IC402 S8054HN
IC403 BU4584BF
IC404 M54543ASL-A
IC404 TRUTH TABLE
Q401 2SK665
Q402 2SA1576
Q403 2SK665
Q404 FMC2
Q405 2SK665
Q406 2SK665
Q407 2SK665
Q408 2SK665
Q409 2SK665
Q411 2SK665
Q412 2SK665
Q413 2SK665
Q414 2SK665
Q415 2SK665
Q416 2SK665
Q417 2SA1576
Q418 2SK665
Q419 2SK665
D401 1MN10
D402 DAP202U
D403 DAP202U
D405 1SS133
CF401
MODE CONTROL MOTOR
From/To 02 Y/C CN1
From/To OPERATION UNIT
From 01 REGULATOR SECTION
From 01 SERVO SECTION
From 03 DRUM MDA CN254
From 01 AUDIO SECTION
END SENSOR TR
MODE CTL SW
JIG
From LCD MODULE
From/To 02 Y/C CN1
From 07 TRIGGER CN5
To 01 REGULATOR SECTION
To LCD MODULE
To 02 Y/C CN2
To 03 DRUM MDA CN254
To PRE/REC AMP CN1
To 02 Y/C CN1
To 07 TRIGGER CN5
To 01 AUDIO SECTION
To 01 SERVO SECTION
To 26 MIC AMP CN702
To OPERATION UNIT
From/To 24 IND CN401

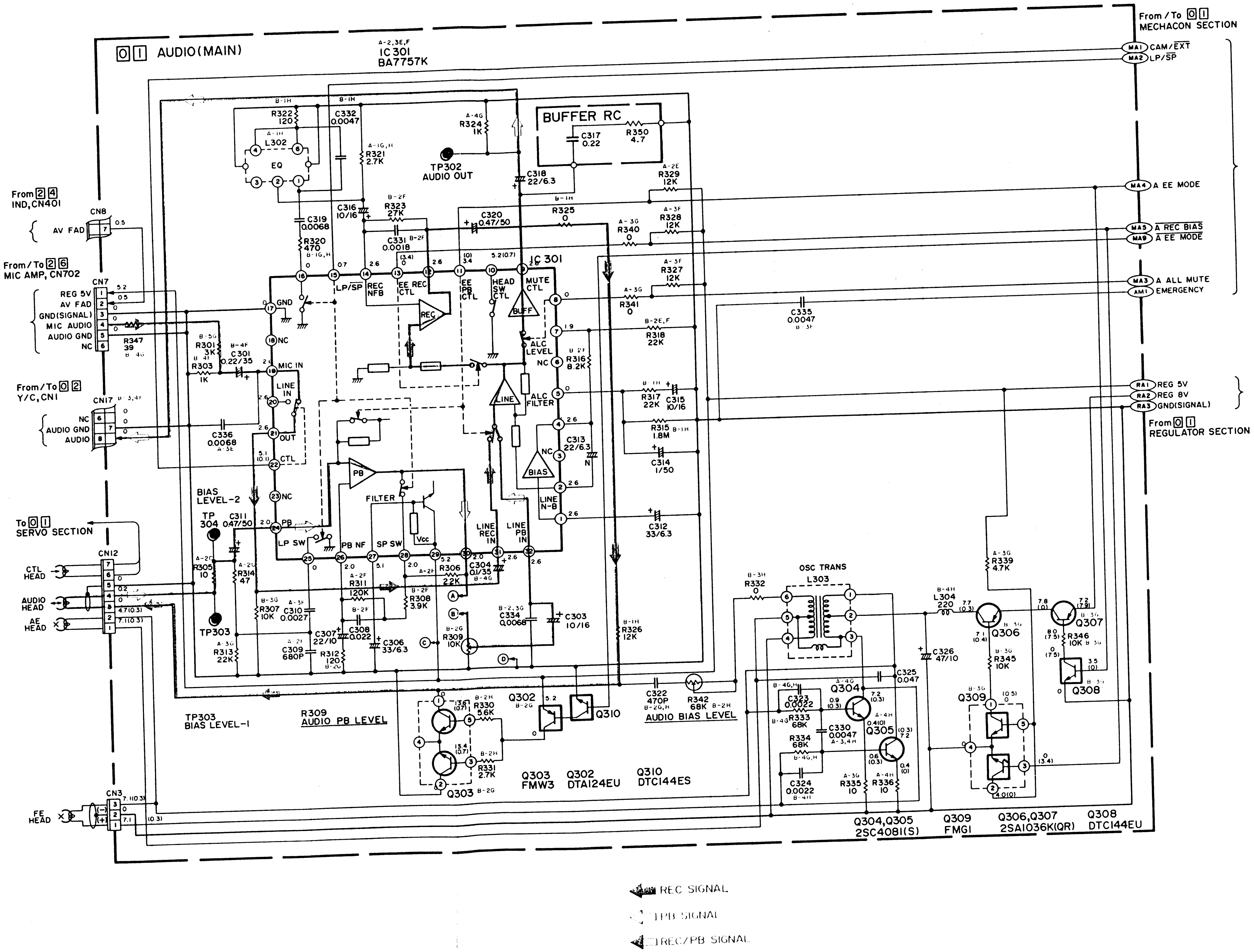
4.13 REGULATOR SCHEMATIC DIAGRAM



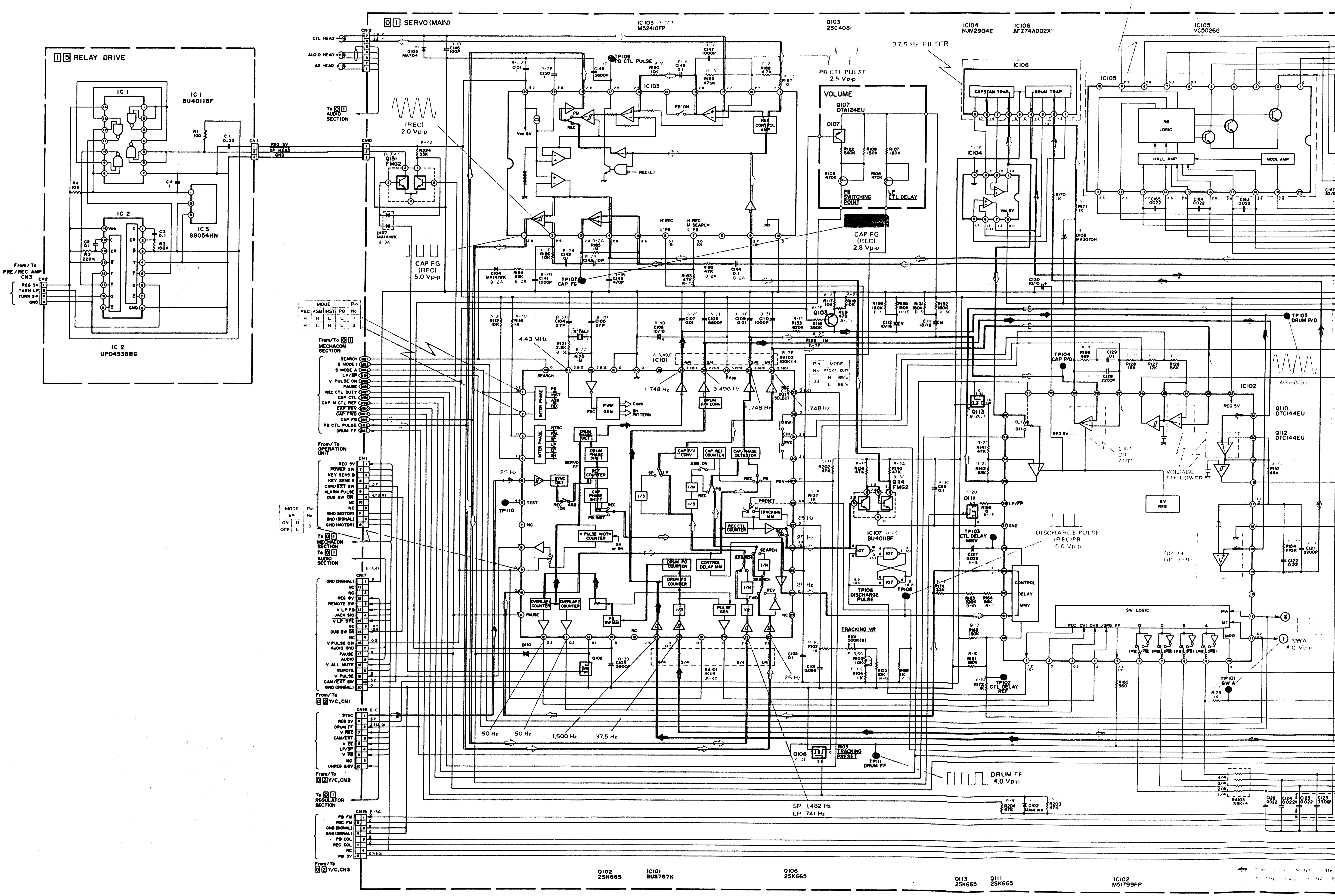
07 TRIGGER
D1 ERA81 -004
F1 AC 250V 3.15A
D1
R1 68K
ALARM SW 2
SW 1
TRIGGER A
BATTERY TERMINAL
DC 9.6V
BATTERY (+)
NC
BATTERY (-)
CN1
CN2
GND
BATTERY (-)
NC
UNREG 9.6V
DC JACK
TRIGGER SUB SW
DATE UNIT
CN3
TRIG SUB SW
GND
To 23 ENCODER CN306
CN4
GND
CAM PWR CTL
UNREG 9.6V
From/To 01 MECHACON SECTION
CN5
UNREG 9.6V
AC ADPT
ALM SW
TRIG SW
CAM PWR CTL
GND
CN9
01 REGULATOR (MAIN)
Q2 DTA124EU
Q5 2SJ146
IC1 S-81250AG
C1 47/16
R21 1M
GND IN OUT
IC1
C2 47/16
TP2 UNSW 5V
TP4 GND
R22 820K
F15
CP4
CP5
F20
CP1
CP2
L2 100
F15
R5 100K
R7 100K
R6 150K
R8 150K
R13 10K
R14 10K
D1
Q2
D1 DAN202U
IC3
Vcc
R12 100K
R11 100K
R9 100K
CP3
DC-DC CONVERTER
DD1
UNREG (MOTOR)
CAP P. UP
CAP POWER
CAP REF
GND
DRUM ERR
DRUM POWER
DRUM P. UP
UNREG 9.6V
POWER ON
REG 5V
GND
CAPSTAN REG
DRUM REG
5V REG
C4 47/16
C7 82/10
C15 0.47/25
C6 82/10
L1 47
C16 22/10
C3 47/16
C5 82/10
R17 1M
R20 820K
Q4
R16 0
IC2 M5236ML
IN GND OUT
R15 12K
REG 8V ADJ
R1 220
Q1
R3 8.2K
R4 1K
C10 0.1
C8 0.047
C9 82/10
R19 1K
Q3
D2 FMN1
TP3 REG 8V
TP5 GND
TP1 REG 5V
RM2 BATT DOWN DET
RM1 UNSW 5V
RM3 GND(MOTOR)
RM4 REG 5V
RM5 REG 8V
MR1 POWER ON
RM6 UNREG 9.6V
RM7 EMERGENCY
RM8 GND(SIGNAL)
From/To 01 MECHACON SECTION
RA1 REG 5V
RA2 REG 8V
RA3 GND(SIGNAL)
To 01 AUDIO SECTION
CN18
UNREG 9.6V
To 02 Y/C,CN2
RS2 REG 5V
RS1 REG 8V
SR1 CAPSTAN POWER UP
RS3 CAPSTAN POWER
SR2 CAPSTAN REF
RS5 GND(SIGNAL)
RS4 GND(MOTOR)
SR3 DRUM POWER UP
From/To 01 SERVO SECTION
CN5
DRUM P ERR
DRUM POWER
From/To 03 DRUM MDA CN254
CN17
REG 8V
To 02 Y/C,CN1
IC3 BA6993F
Q1 2SB1009(PQ)
Q4 2SJ146
Q3 DTC144EU

4.14 AUDIO SCHEMATIC DIAGRAM

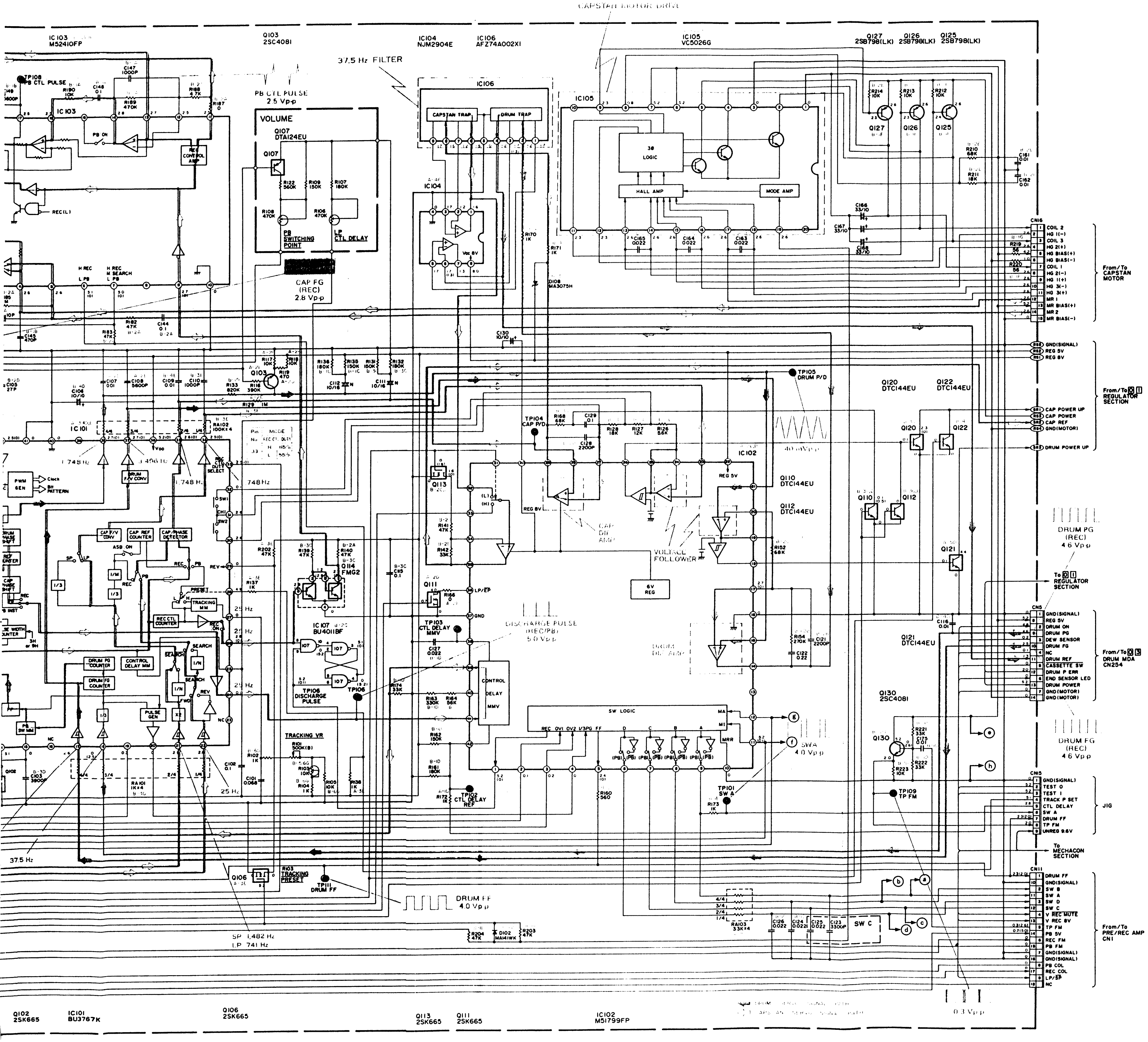

H. TRAP
TRAP 301
OUT IN GND IN OUT
R354 0
R355 0
R351 0
R353 0
R352 0
GND
IC 302
NJM2904E
V
IN
OUT
Vcc
GND

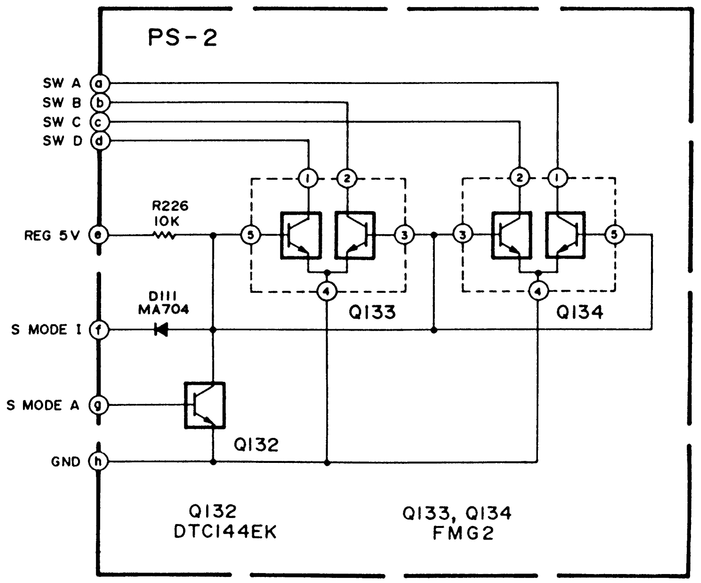

From / To 0 1 MECHACON SECTION
0 1 AUDIO (MAIN)
IC 301 BA7757K
MA1 CAM/EXT
MA2 LP/SP
MA4 A EE MODE
MA5 A REC BIAS
MA9 A EE MODE
MA3 A ALL MUTE
AM1 EMERGENCY
RA1 REG 5V
RA2 REG 8V
RA3 GND(SIGNAL)
From 0 1 REGULATOR SECTION
From 2 4 IND, CN401
CN8 AV FAD
From/To 2 6 MIC AMP, CN702
CN7
REG 5V
AV FAD
GND(SIGNAL)
MIC AUDIO
AUDIO GND
NC
From/To 0 2 Y/C, CN1
CN17
NC
AUDIO GND
AUDIO
To 0 1 SERVO SECTION
CN12
CTL HEAD
AUDIO HEAD
AE HEAD
CN3
FE HEAD
R322 120
L302
EQ
C332 0.0047
R321 2.7K
R324 1K
TP302 AUDIO OUT
BUFFER RC
C317 0.22
R350 4.7
C318 22/6.3
R329 12K
C319 0.0068
R320 470
C316 10/16
R323 27K
C331 0.0018
C320 0.47/50
R325 0
R340 0
R328 12K
R327 12K
R341 0
C335 0.0047
R318 22K
R316 8.2K
R317 22K
C315 10/16
R315 1.8M
C313 22/6.3
C314 1/50
C312 33/6.3
LP/SP
REC NFB
EE REC CTL
EE PB CTL
HEAD SW CTL
MUTE CTL
BUFF
REC
ALC LEVEL
LINE
ALC FILTER
BIAS
LINE N-B
GND
NC
MIC IN
LINE IN
OUT
CTL
R301 3K
R303 1K
C301 0.22/35
R347 39
C336 0.0068
BIAS LEVEL-2
TP 304
C311 0.47/50
PB
LP SW
PB NF
SP SW
FILTER
Vcc
LINE REC IN
LINE PB IN
R305 10
R314 47
R311 120K
R308 3.9K
R306 22K
C304 0.1/35
R307 10K
C310 0.0027
C309 680P
C307 22/10
R312 120
C308 0.022
C306 33/6.3
R313 22K
R309 10K
C334 0.0068
C303 10/16
R326 12K
TP303
TP303 BIAS LEVEL-1
R309 AUDIO PB LEVEL
R330 5.6K
R331 2.7K
Q302
Q303
Q310
Q303 FMW3
Q302 DTA124EU
Q310 DTC144ES
C322 470P
R342 68K
AUDIO BIAS LEVEL
R332 0
OSC TRANS L303
C323 0.0022
R333 68K
R334 68K
C330 0.0047
C324 0.0022
Q304
Q305
C325 0.0047
R335 10
R336 10
L304 220
C326 47/10
Q306
R339 4.7K
R345 10K
Q309
Q307
R346 10K
Q308
Q304,Q305 2SC4081(S)
Q309 FMG1
Q306,Q307 2SA1036K(QR)
Q308 DTC144EU
REC SIGNAL
PB SIGNAL
REC/PB SIGNAL

4.15 SERVO SCHEMATIC DIAGRAM



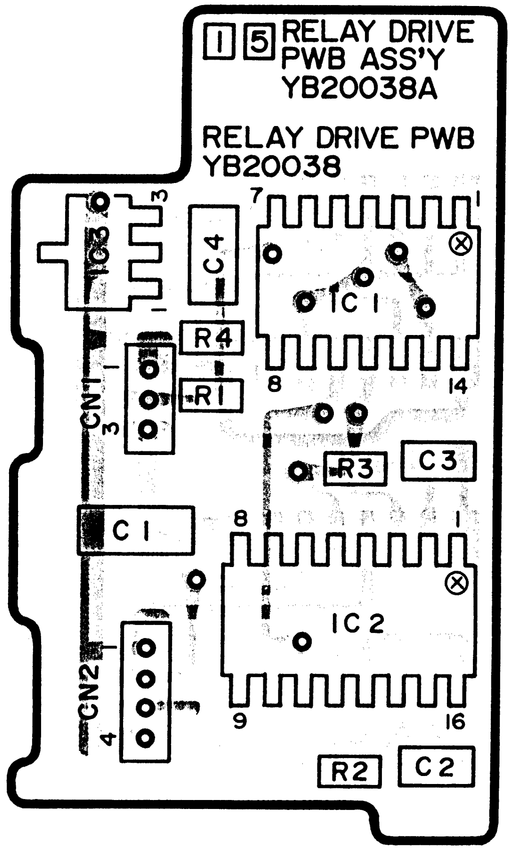
1 5 RELAY DRIVE
IC 1 BU4011BF
IC 2 UPD4538BG
IC 3 S8054HN
From/To PRE/REC AMP CN3
REG 5V
TURN LP
TURN SP
GND
0 1 SERVO (MAIN)
CTL HEAD
AUDIO HEAD
AE HEAD
To 0 1 AUDIO SECTION
Q131 FMG2
D103 MA704
D107 MA141WK
IC103 M52410FP
TP108 PB CTL PULSE
REC CONTROL AMP
REC(L)
(REC) 2.0 Vp-p
CAP FG (REC) 5.0 Vp-p
TP107 CAP FG
Q103 2SC4081
PB CTL PULSE 2.5 Vp-p
VOLUME
Q107 DTA124EU
PB SWITCHING POINT
LP CTL DELAY
CAP FG (REC) 2.8 Vp-p
37.5 Hz FILTER
IC104 NJM2904E
IC106 AFZ74A002XI
CAPSTAN TRAP
DRUM TRAP
CAPSTAN MOTOR DRIVE
IC105 VC5026G
3Φ LOGIC
HALL AMP
MODE AMP
D108 MA3075H
From/To 0 1 MECHACON SECTION
SEARCH
S MODE I
S MODE A
LP/EP
V PULSE ON
PAUSE
REC CTL DUTY
CAP CTL
CAP M CTL REF
CAP REV
CAP FWD
CAP FG
PB CTL PULSE
DRUM FF
From/To OPERATION UNIT
To 0 1 MECHACON SECTION
To 0 1 AUDIO SECTION
From/To 0 2 Y/C, CN1
From/To 0 2 Y/C, CN2
To 0 1 REGULATOR SECTION
From/To 0 2 Y/C, CN3
4.43 MHz
X'TAL1
IC101
PWM GEN
INTER PHASE
DRUM PHASE DET
DRUM PHASE SHIFT
REC COUNTER
CAP PHASE SHIFT
CAP F/V CONV
CAP REF COUNTER
CAP PHASE DETECTOR
DRUM F/V CONV
TRACKING MM
REC CTL COUNTER
V PULSE WIDTH COUNTER
DRUM PG COUNTER
CONTROL DELAY MM
OVERLAP1 COUNTER
OVERLAP2 COUNTER
PULSE GEN
1.748 Hz
3.496 Hz
25 Hz
TP110
Q102
50 Hz
50 Hz
1,500 Hz
37.5 Hz
Q106
TRACKING VR
R103 TRACKING PRESET
TP111 DRUM FF
DRUM FF 4.0 Vp-p
SP 1,482 Hz
LP 741 Hz
IC107 BU4011BF
Q114 FMG2
TP106 DISCHARGE PULSE
Q111
Q113
TP103 CTL DELAY MMV
TP102 CTL DELAY REF
DISCHARGE PULSE (REC/PB) 5.0 Vp-p
CONTROL DELAY MMV
SW LOGIC
TP104 CAP P/D
TP105 DRUM P/D
40 mVp-p
CAP DIF AMP
VOLTAGE FOLLOWER
6V REG
DRUM DIF AMP
IC102
Q110 DTC144EU
Q112 DTC144EU
TP101 SW A
SW A 4.0 Vp-p
Q102 2SK665
IC101 BU3767K
Q106 2SK665
Q113 2SK665
Q111 2SK665
IC102 M51799FP


CAPSTAN MOTOR DRIVE
IC103 M52410FP
Q103 2SC4081
IC104 NJM2904E
IC106 AFZ74A002XI
IC105 VC5026G
Q127 2SB798(LK)
Q126 2SB798(LK)
Q125 2SB798(LK)
37.5 Hz FILTER
CAPSTAN TRAP
DRUM TRAP
PB CTL PULSE 2.5 Vp-p
VOLUME
Q107 DTA124EU
PB SWITCHING POINT
LP CTL DELAY
CAP FG (REC) 2.8 Vp-p
3θ LOGIC
HALL AMP
MODE AMP
TP108 PB CTL PULSE
REC CONTROL AMP
REC(L)
H REC
H SEARCH
L PB
TP105 DRUM P/D
TP104 CAP P/D
40 mVp-p
IC102
CAP DIF AMP
VOLTAGE FOLLOWER
6V REG
REG 5V
REG 8V
Q110 DTC144EU
Q112 DTC144EU
Q120 DTC144EU
Q122 DTC144EU
Q121 DTC144EU
Q130 2SC4081
Q113
Q111
Q114 FMG2
IC107 BU4011BF
TP106 DISCHARGE PULSE
DISCHARGE PULSE (REC/PB) 5.0 Vp-p
TP103 CTL DELAY MMV
CONTROL DELAY MMV
LP/EP
GND
SW LOGIC
REC OV1 OV2 1/3PG FF
MA
MI
MRR
TP101 SW A
SWA 4.0 Vp-p
TP102 CTL DELAY REF
TP109 TP FM
TP111 DRUM FF
DRUM FF 4.0 Vp-p
TRACKING VR
R103 TRACKING PRESET
SW C
DRUM PG (REC) 4.6 Vp-p
DRUM FG (REC) 4.6 Vp-p
0.3 Vp-p
1.748 Hz
1.496 Hz
748 Hz
25 Hz
37.5 Hz
SP 1,482 Hz
LP 741 Hz
PWM GEN
Clock
Bit PATTERN
DRUM F/V CONV
CAP F/V CONV
CAP REF COUNTER
CAP/PHASE DETECTOR
TRACKING MM
REC CTL COUNTER
DRUM PG COUNTER
DRUM FG COUNTER
CONTROL DELAY MM
PULSE GEN
SEARCH
REV
FWD
CN16
COIL 2
HG 1(-)
COIL 3
HG 2(+)
HG BIAS(+)
HG BIAS(-)
COIL 1
HG 2(-)
HG 1(+)
HG 3(-)
HG 3(+)
MR 1
MR BIAS(+)
MR 2
MR BIAS(-)
From/To CAPSTAN MOTOR
GND(SIGNAL)
REG 5V
REG 8V
CAP POWER UP
CAP POWER
CAP REF
GND(MOTOR)
DRUM POWER UP
From/To REGULATOR SECTION
To REGULATOR SECTION
CN5
GND(SIGNAL)
REG 5V
DRUM ON
DRUM PG
DEW SENSOR
DRUM FG
NC
DRUM REF
CASSETTE SW
DRUM P ERR
END SENSOR LED
DRUM POWER
GND(MOTOR)
GND(MOTOR)
From/To DRUM MDA CN254
CN5
GND(SIGNAL)
TEST 0
TEST 1
TRACK P SET
CTL DELAY
SW A
DRUM FF
TP FM
UNREG 9.6V
JIG
To MECHACON SECTION
CN11
DRUM FF
GND(SIGNAL)
SW B
SW A
SW D
SW C
V REC MUTE
V REC 8V
TP FM
PB 5V
REC FM
PB FM
GND(SIGNAL)
GND(SIGNAL)
PB COL
REC COL
LP/SP
NC
From/To PRE/REC AMP CN1
Q102 2SK665
IC101 BU3767K
Q106 2SK665
Q113 2SK665
Q111 2SK665
IC102 M51799FP

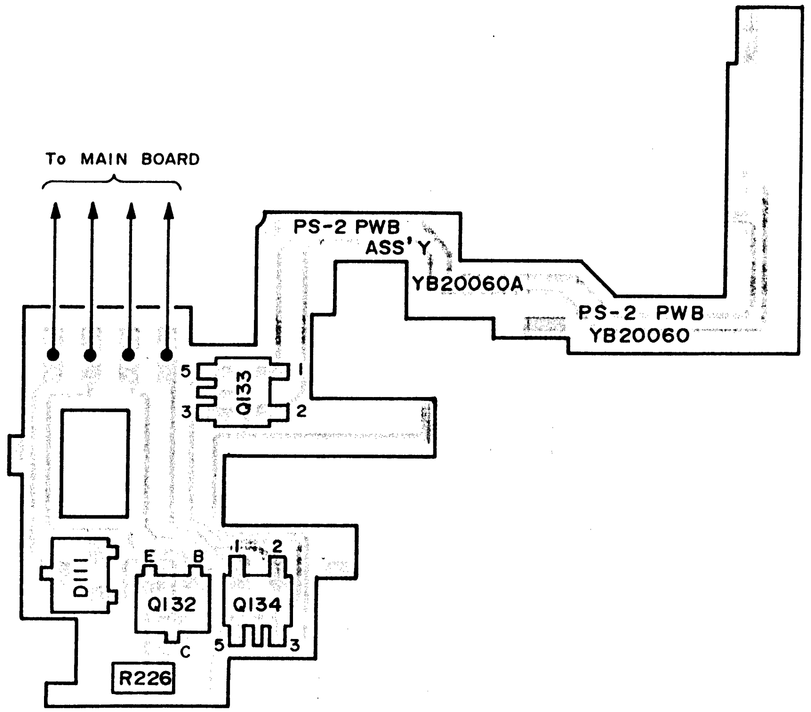

PS-2
SW A
SW B
SW C
SW D
REG 5V
R226 10K
D111 MA704
S MODE I
S MODE A
GND
Q133
Q134
Q132
Q132 DTC144EK
Q133, Q134 FMG2

4.16 MAIN AND RELAY DRIVE CIRCUIT BOARDS

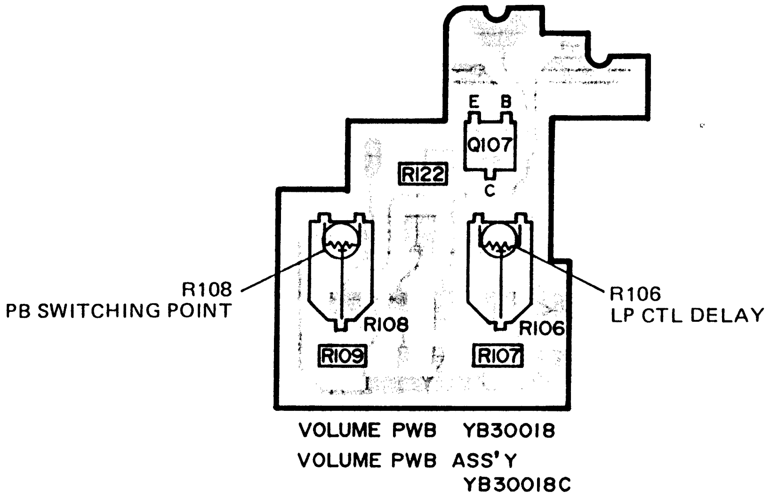
– RELAY DRIVE –


1 5 RELAY DRIVE PWB ASS'Y YB20038A
RELAY DRIVE PWB YB20038
IC3
C4
IC1
R4
R1
CN1
R3
C3
C1
IC2
CN2
R2
C2

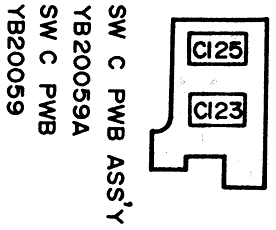
– PS-2 –


To MAIN BOARD
PS-2 PWB ASS'Y YB20060A
PS-2 PWB YB20060
Q133
D111
Q132
Q134
R226

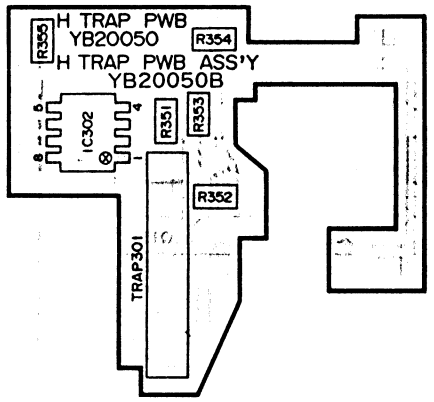
– VOLUME –


Q107
R122
R108 PB SWITCHING POINT
R106 LP CTL DELAY
R108
R106
R109
R107
VOLUME PWB YB30018
VOLUME PWB ASS'Y YB30018C

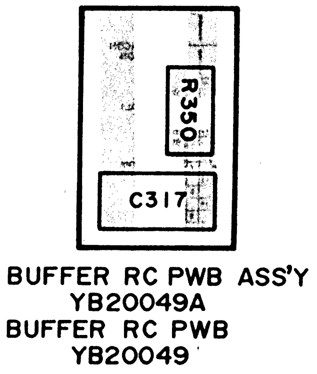
– SW C –


SW C PWB ASS'Y YB20059A
SW C PWB YB20059
C125
C123

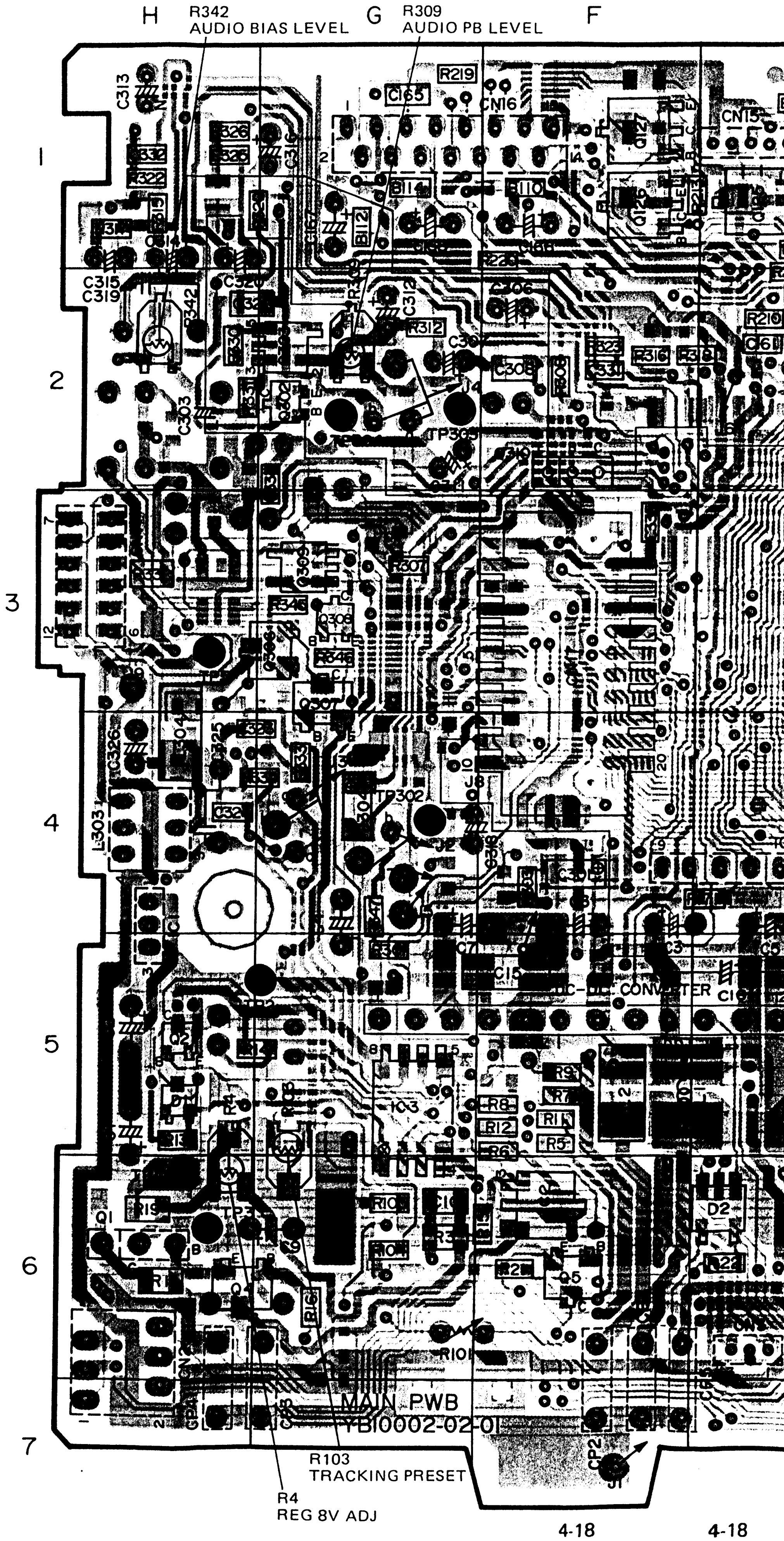
– H. TRAP –


H TRAP PWB YB20050
H TRAP PWB ASS'Y YB20050B
R355
R354
IC302
R351
R353
R352
TRAP301

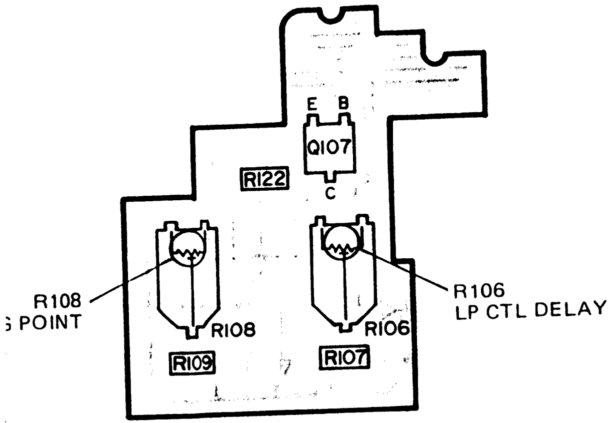
– BUFFER RC –


R350
C317
BUFFER RC PWB ASS'Y YB20049A
BUFFER RC PWB YB20049

– MAIN –

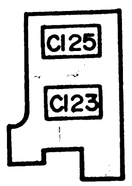

H
R342 AUDIO BIAS LEVEL
G
R309 AUDIO PB LEVEL
F
1
2
3
4
5
6
7
C313
C315
C319
R219
CN16
CN15
TP302
TP303
DC-DC CONVERTER
MAIN PWB YB10002-02-01
R103 TRACKING PRESET
R4 REG 8V ADJ

– VOLUME –

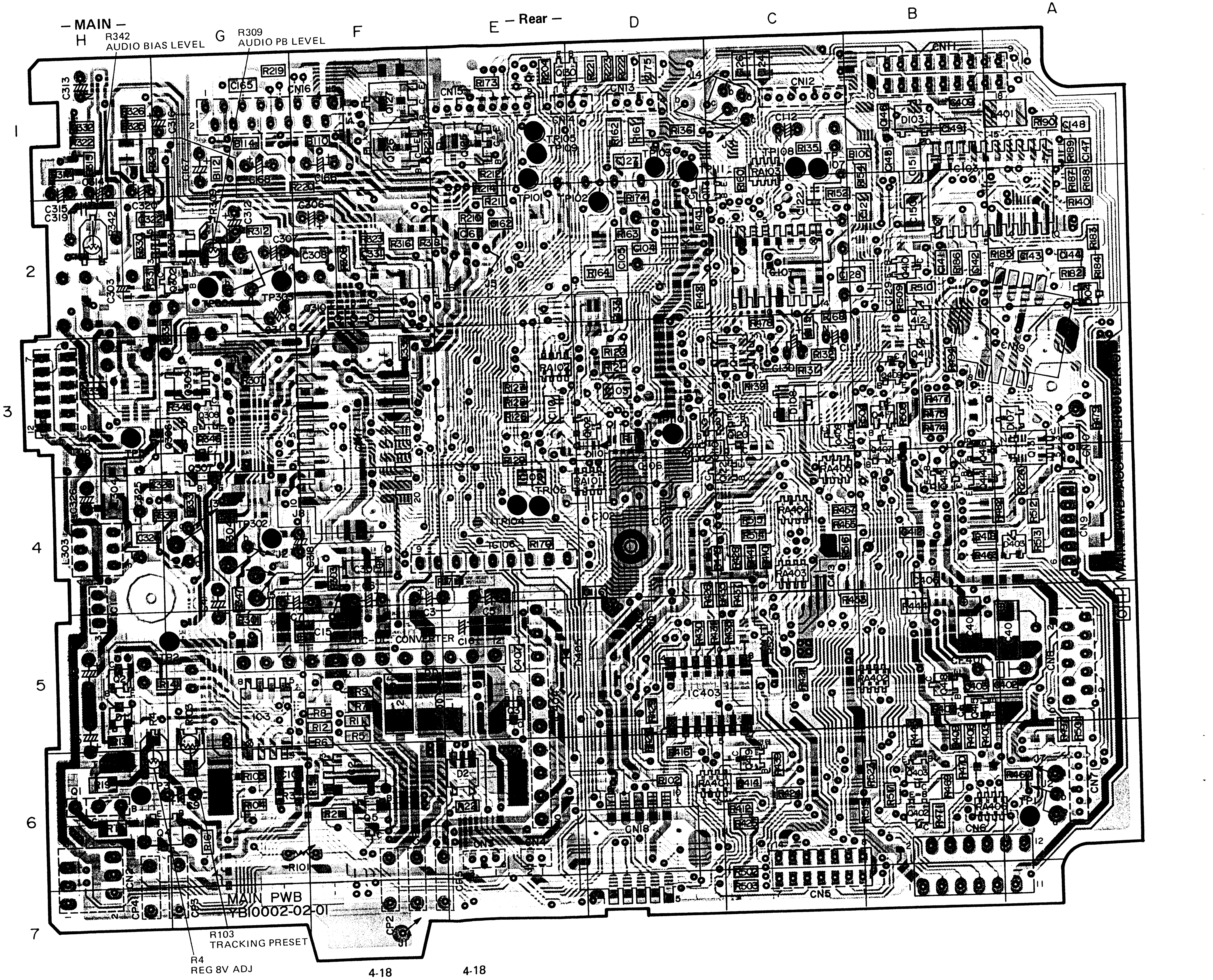

E B
Q107
C
R122
R108
R106
R109
R107
R108
POINT
R106
LP CTL DELAY

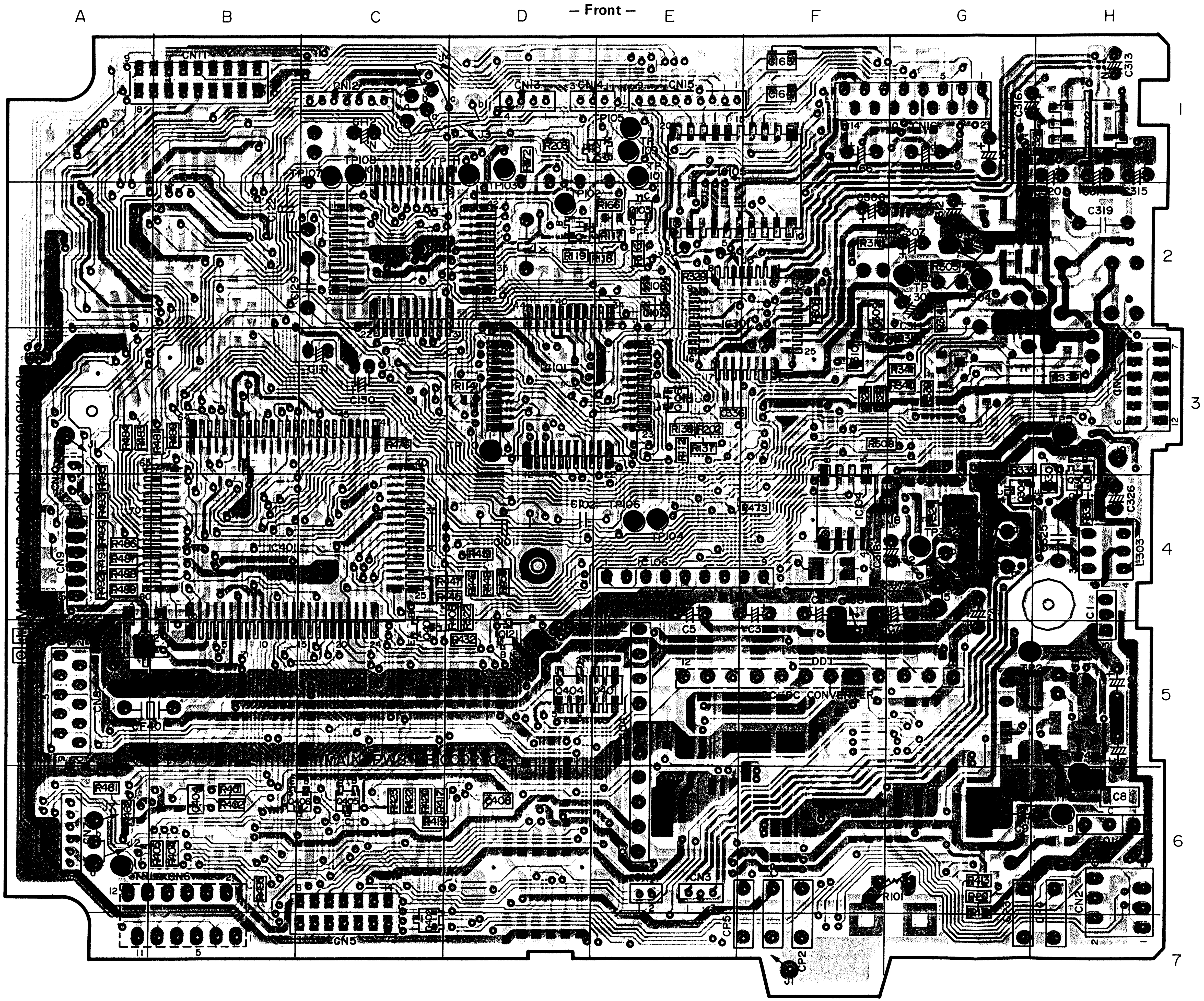
VOLUME PWB YB30018
VOLUME PWB ASS'Y YB30018C

– SW C –

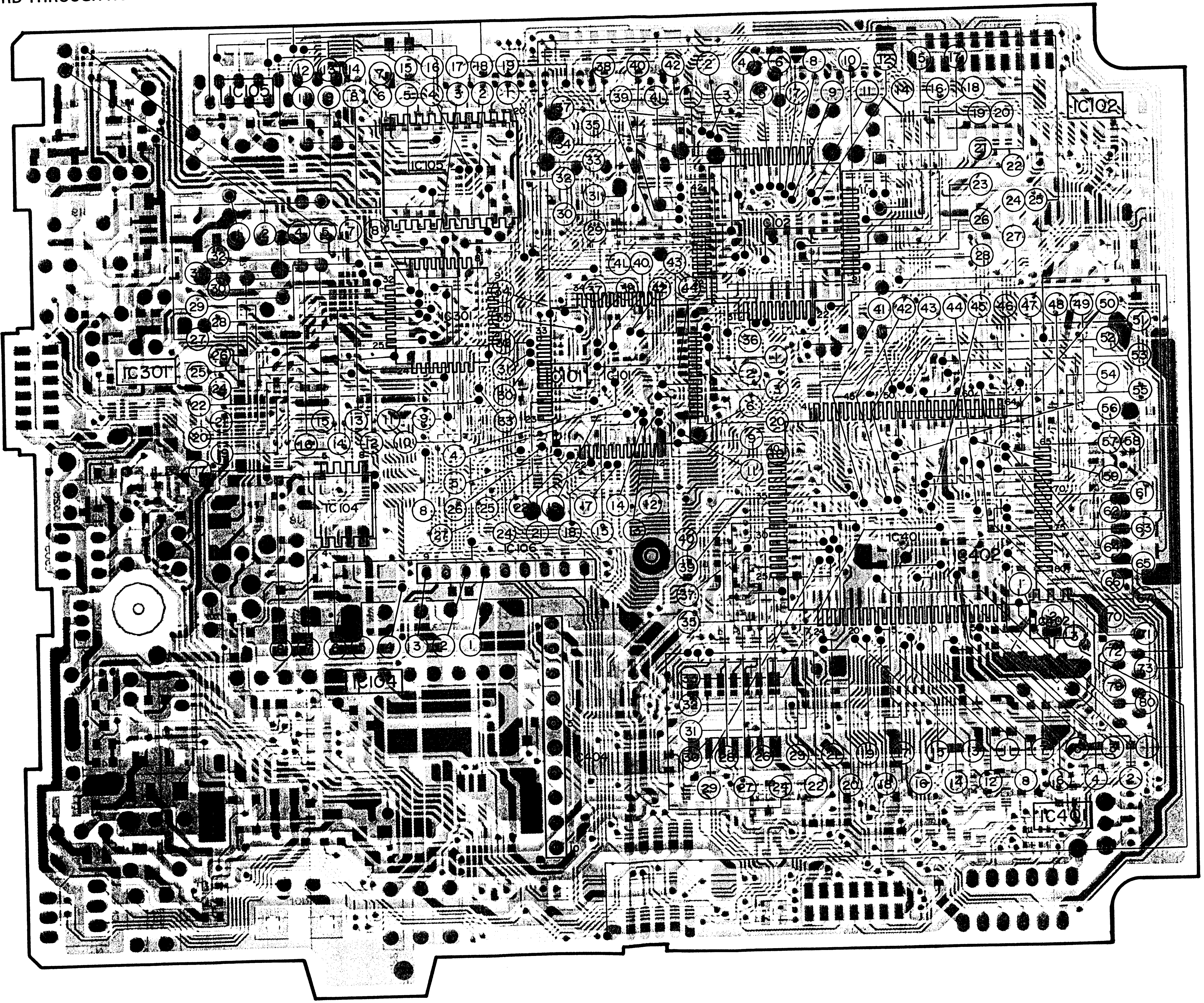


SW C PWB ASS'Y
YB20059A
SW C PWB
YB20059

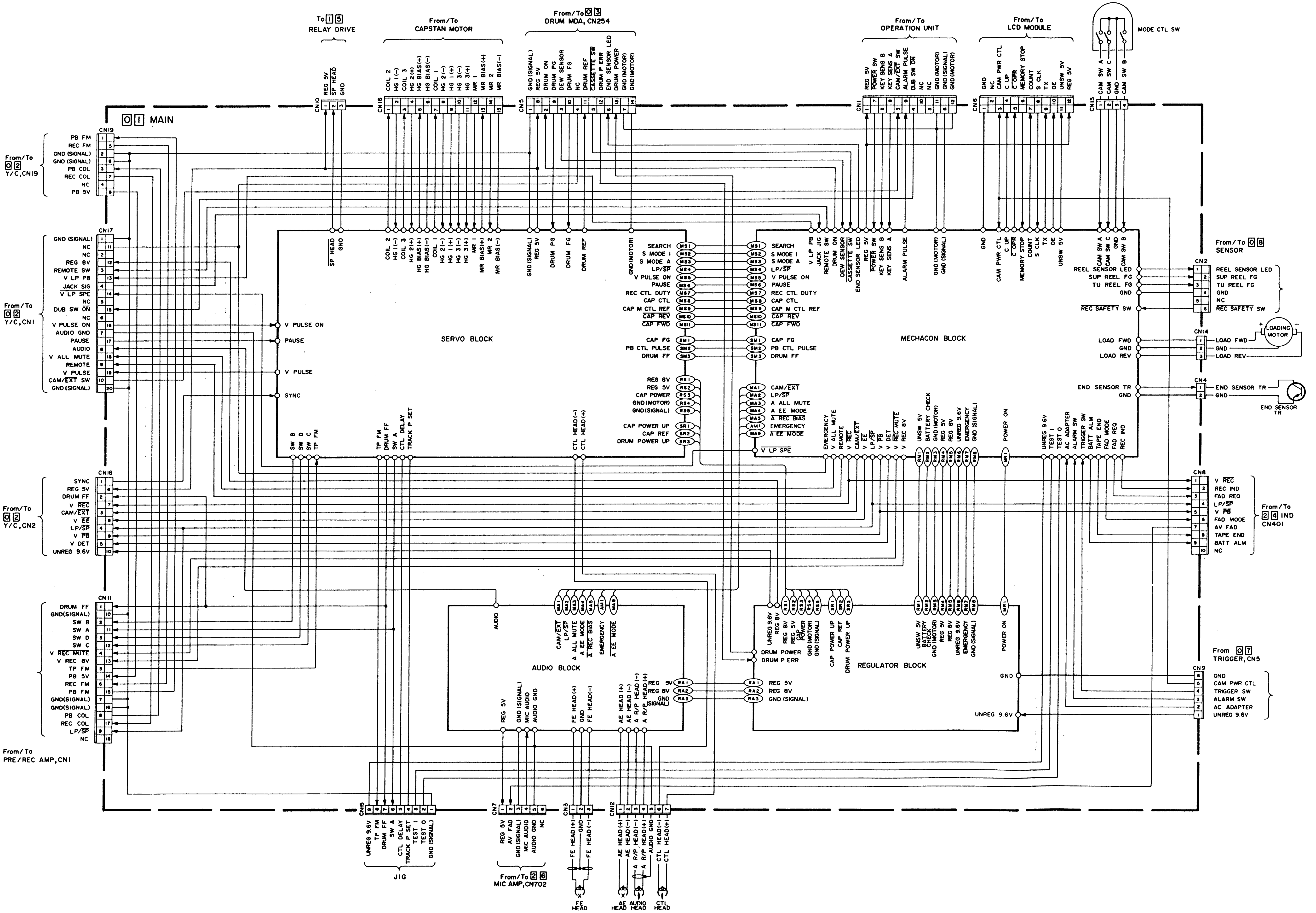

– MAIN –
H
R342
AUDIO BIAS LEVEL
G
R309
AUDIO PB LEVEL
F
E
– Rear –
D
C
B
A
1
2
3
4
5
6
7
DC-DC CONVERTER
MAIN PWB
YB10002-02-01
R103
TRACKING PRESET
R4
REG 8V ADJ


– Front –
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
CN11
CN12
CN13
CN14
CN15
CN16
CN9
CN8
CN7
CN6
CN5
CN3
CN2
CP2
CP5
J1
TP107
TP108
TP101
TP102
TP103
TP105
TP104
TP106
IC101
IC106
Q404
D401
C5
C3
C8
C1
C150
C319
C313
C315
C326
L303
R101
DD1
DC/DC CONVERTER
MAIN PWB

4.17 MAIN BOARD THROUGH HOLE LOCATION

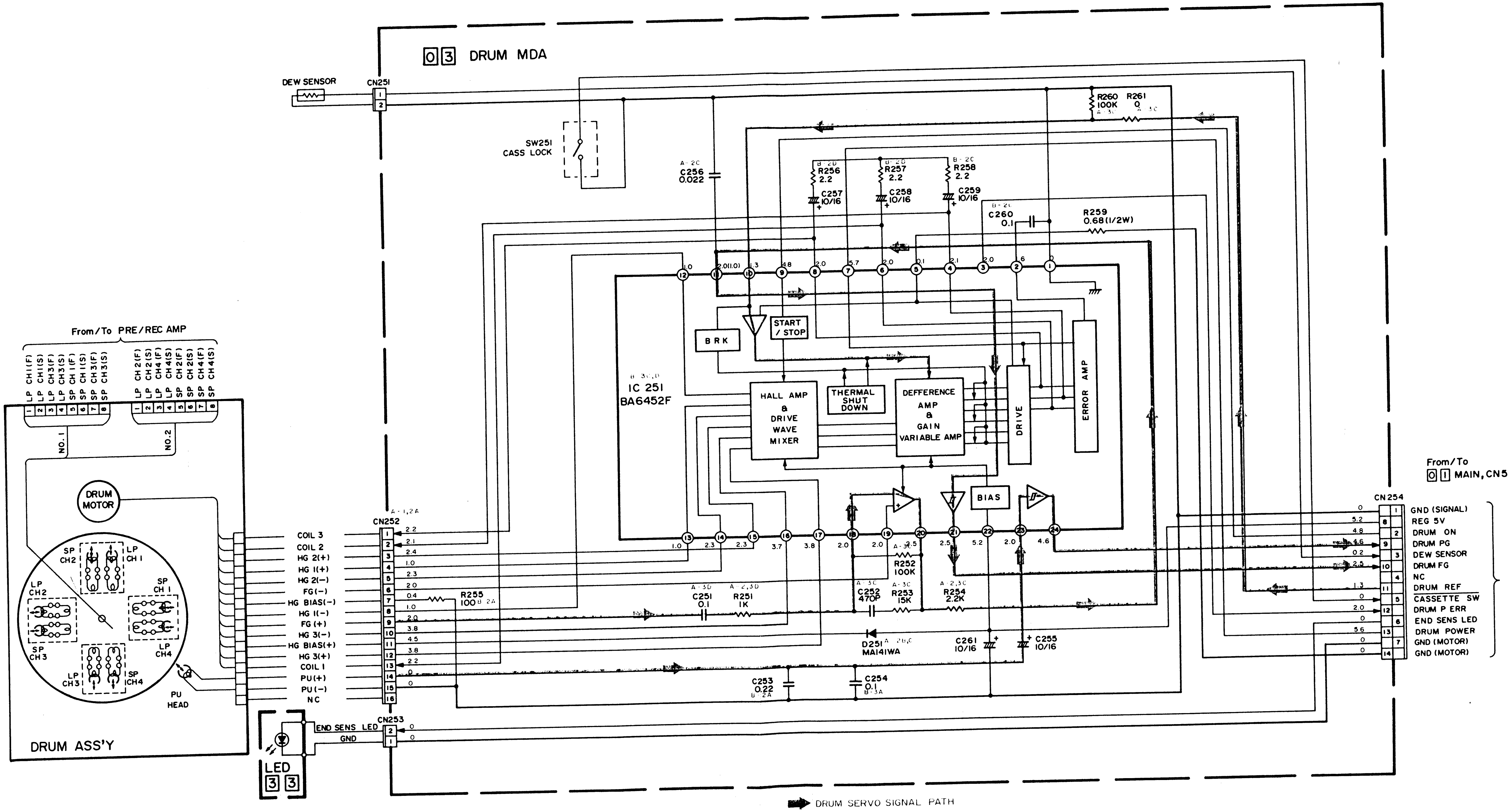

IC105
IC105
IC102
IC102
IC301
IC301
IC101
IC101
IC104
IC104
IC106
IC401
IC401
IC402

4.18 MAIN BOARD OVERALL WIRING



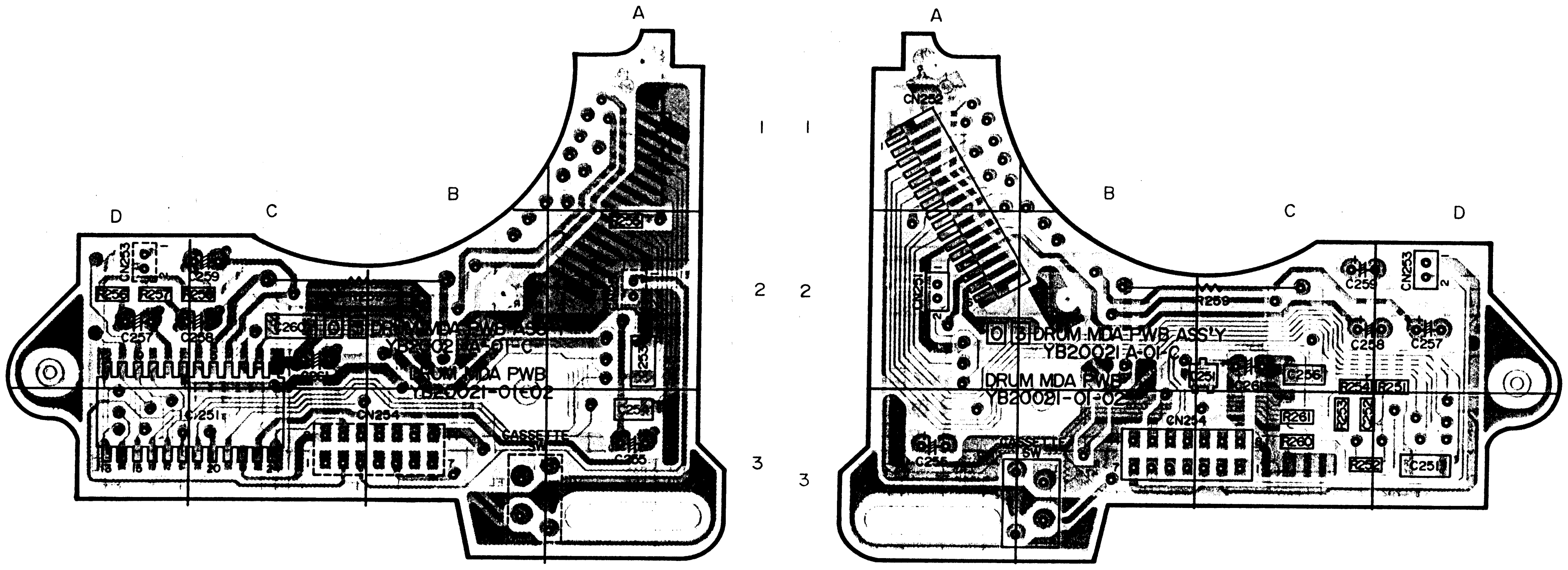
To 15 RELAY DRIVE
From/To CAPSTAN MOTOR
From/To 03 DRUM MDA, CN254
From/To OPERATION UNIT
From/To LCD MODULE
MODE CTL SW
01 MAIN
CN10 REG 5V SP HEAD GND
CN16 COIL 2 HG 1(−) COIL 3 HG 2(+) HG BIAS(+) HG BIAS(−) COIL 1 HG 2(−) HG 1(+) HG 3(−) HG 3(+) MR 1 MR BIAS(+) MR 2 MR BIAS(−)
CN5 GND (SIGNAL) REG 5V DRUM ON DRUM PG DEW SENSOR DRUM FG NC DRUM REF CASSETTE SW DRUM P ERR END SENSOR LED DRUM POWER GND (MOTOR) GND (MOTOR)
CN1 REG 5V POWER SW KEY SENS B KEY SENS A CAM/EXT SW ALARM PULSE DUB SW ON NC NC GND (MOTOR) GND (SIGNAL) GND (MOTOR)
CN6 GND NC CAM PWR CTL C UP C OPR MEMORY STOP COUNT S CLK TX OE UNSW 5V REG 5V
CN13 CAM SW A CAM SW C GND CAM SW B
From/To 02 Y/C, CN19
CN19 PB FM REC FM GND (SIGNAL) GND (SIGNAL) PB COL REC COL NC PB 5V
From/To 02 Y/C, CN1
CN17 GND (SIGNAL) NC NC REG 8V REMOTE SW V LP PB JACK SIG V LP SPE NC DUB SW ON NC V PULSE ON AUDIO GND PAUSE AUDIO V ALL MUTE REMOTE V PULSE CAM/EXT SW GND (SIGNAL)
From/To 02 Y/C, CN2
CN18 SYNC REG 5V DRUM FF V REC CAM/EXT V EE LP/SP V PB V DET UNREG 9.6V
From/To PRE/REC AMP, CN1
CN11 DRUM FF GND (SIGNAL) SW B SW A SW D SW C V REC MUTE V REC 8V TP FM PB 5V REC FM PB FM GND (SIGNAL) GND (SIGNAL) PB COL REC COL LP/SP NC
SERVO BLOCK
SP HEAD GND
V PULSE ON
PAUSE
V PULSE
SYNC
SEARCH S MODE 1 S MODE A LP/SP V PULSE ON PAUSE REC CTL DUTY CAP CTL CAP M CTL REF CAP REV CAP FWD
MS1 MS2 MS3 MS4 MS5 MS6 MS7 MS8 MS9 MS10 MS11
CAP FG PB CTL PULSE DRUM FF
SM1 SM2 SM3
REG 8V REG 5V CAP POWER GND (MOTOR) GND (SIGNAL)
RS1 RS2 RS3 RS4 RS5
CAP POWER UP CAP REF DRUM POWER UP
SR1 SR2 SR3
SW B SW D SW C TP FM
TP FM DRUM FF SW A CTL DELAY TRACK P SET
CTL HEAD (−) CTL HEAD (+)
MECHACON BLOCK
V LP PB JACK JIG REMOTE SW DRUM ON DEW SENSOR CASSETTE SW END SENSOR LED REG 5V POWER SW KEY SENS B KEY SENS A ALARM PULSE GND (MOTOR) GND (SIGNAL)
CAM/EXT LP/SP A ALL MUTE A EE MODE A REC BIAS EMERGENCY A EE MODE
MA1 MA2 MA3 MA4 MA5 AM1 MA9
V LP SPE
EMERGENCY V ALL MUTE REMOTE V REC CAM/EXT V EE LP/SP V PB V DET V REC MUTE V REC 8V
UNSW 5V BATTERY CHECK GND (MOTOR) REG 5V REG 8V UNREG 9.6V EMERGENCY GND (SIGNAL)
RM1 RM2 RM3 RM4 RM5 RM6 RM7 RM8
POWER ON
MR1
UNREG 9.6V TEST 1 TEST 0 AC ADAPTER ALARM SW TRIGGER SW BATT ALM TAPE END FAD MODE FAD REQ REC IND
From/To 08 SENSOR
CN2 REEL SENSOR LED SUP REEL FG TU REEL FG GND NC REC SAFETY SW
CN14 LOAD FWD GND LOAD REV
LOADING MOTOR
CN4 END SENSOR TR GND
END SENSOR TR
CN8 V REC REC IND FAD REQ LP/SP V PB FAD MODE AV FAD TAPE END BATT ALM NC
From/To 24 IND CN401
AUDIO BLOCK
AUDIO
CAM/EXT LP/SP A ALL MUTE A EE MODE A REC BIAS EMERGENCY A EE MODE
REG 5V GND (SIGNAL) MIC AUDIO AUDIO GND
FE HEAD (+) GND FE HEAD (−)
AE HEAD (+) AE HEAD (−) A R/P HEAD (−) A R/P HEAD (+)
REG 5V REG 8V GND (SIGNAL)
RA1 RA2 RA3
REGULATOR BLOCK
UNREG 9.6V REG 5V REG 8V REG 5V CAP POWER GND (MOTOR) GND (SIGNAL) CAP POWER UP CAP REF DRUM POWER UP
DRUM POWER DRUM P ERR
UNSW 5V BATTERY CHECK GND (MOTOR) REG 5V REG 8V UNREG 9.6V EMERGENCY GND (SIGNAL)
POWER ON
GND
UNREG 9.6V
From 07 TRIGGER, CN5
CN9 GND CAM PWR CTL TRIGGER SW ALARM SW AC ADAPTER UNREG 9.6V
CN15 UNREG 9.6V TP FM DRUM FF SW A CTL DELAY TRACK P SET TEST 1 TEST 0 GND (SIGNAL)
JIG
CN7 REG 5V AV FAD GND (SIGNAL) MIC AUDIO AUDIO GND NC
From/To 26 MIC AMP, CN702
CN3 FE HEAD (+) GND FE HEAD (−)
FE HEAD
CN12 AE HEAD (+) AE HEAD (−) A R/P HEAD (−) A R/P HEAD (+) AUDIO GND CTL HEAD (−) CTL HEAD (+)
AE HEAD AUDIO HEAD CTL HEAD

4.19 DRUM MDA SCHEMATIC DIAGRAM


0 3 DRUM MDA
DEW SENSOR
CN251
SW251 CASS LOCK
C256 0.022
R256 2.2
C257 10/16
R257 2.2
C258 10/16
R258 2.2
C259 10/16
C260 0.1
R259 0.68(1/2W)
R260 100K
R261 0
IC 251 BA6452F
BRK
START / STOP
HALL AMP & DRIVE WAVE MIXER
THERMAL SHUT DOWN
DEFFERENCE AMP & GAIN VARIABLE AMP
DRIVE
ERROR AMP
BIAS
From/To PRE/REC AMP
LP CH1(F)
LP CH1(S)
LP CH3(F)
LP CH3(S)
SP CH1(F)
SP CH1(S)
SP CH3(F)
SP CH3(S)
LP CH2(F)
LP CH2(S)
LP CH4(F)
LP CH4(S)
SP CH2(F)
SP CH2(S)
SP CH4(F)
SP CH4(S)
NO.1
NO.2
DRUM MOTOR
SP CH2
LP CH1
LP CH2
SP CH1
SP CH3
LP CH4
LP CH3
SP CH4
PU HEAD
DRUM ASS'Y
CN252
COIL 3
COIL 2
HG 2(+)
HG 1(+)
HG 2(−)
FG(−)
HG BIAS(−)
HG 1(−)
FG(+)
HG 3(−)
HG BIAS(+)
HG 3(+)
COIL 1
PU(+)
PU(−)
NC
R255 100
C251 0.1
R251 1K
C252 470P
R252 100K
R253 15K
R254 2.2K
D251 MA141WA
C261 10/16
C255 10/16
C253 0.22
C254 0.1
LED 3 3
END SENS LED
GND
CN253
From/To 0 1 MAIN, CN5
CN254
GND (SIGNAL)
REG 5V
DRUM ON
DRUM PG
DEW SENSOR
DRUM FG
NC
DRUM REF
CASSETTE SW
DRUM P ERR
END SENS LED
DRUM POWER
GND (MOTOR)
GND (MOTOR)
DRUM SERVO SIGNAL PATH

4.20 DRUM MDA & UPPER DRUM CIRCUIT BOARDS

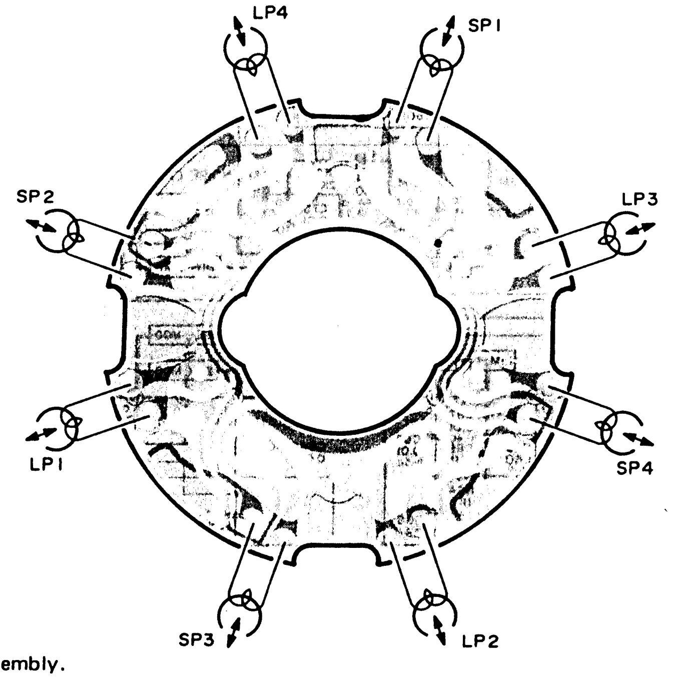
– DRUM MDA –


–Rear –

– Front –

A
B
C
D
1
2
3
CN253
CN252
CN251
CN254
IC251
R256
R257
R258
R259
R260
R261
R262
R263
C256
C257
C258
C259
C251
C255
C252
CASSETTE SW
0 5 DRUM MDA PWB ASS'Y YB20021A-01-C
DRUM MDA PWB YB20021-01-02

– UPPER DRUM –

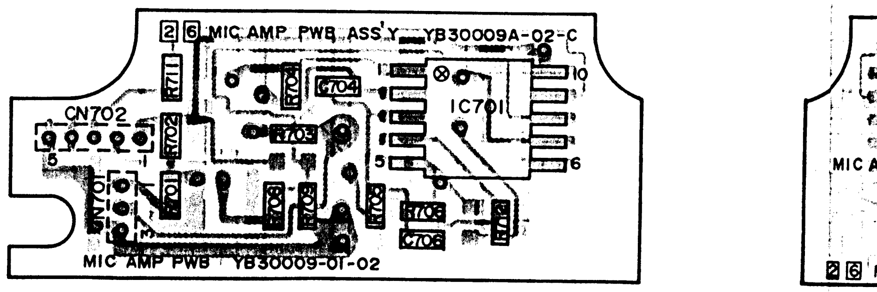

LP4
SP1
SP2
LP3
LP1
SP4
SP3
LP2

Note: This circuit board is included in upper drum assembly.

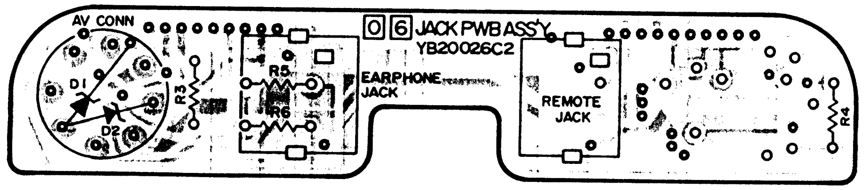
4.21 MIC AMP, JACK, MIC JACK & TRIGGER CIRCUIT BOARDS

– MIC AMP –

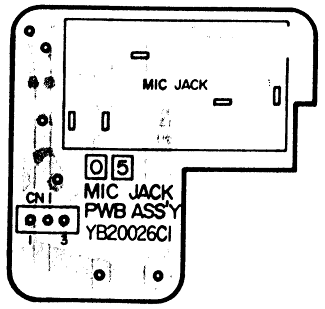
– Rear –


2 6 MIC AMP PWB ASS'Y YB30009A-02-C
MIC AMP PWB YB30009-01-02
CN702
CN701
IC701
R701
R702
R703
R704
R705
R706
R707
R708
C701
C702
C703
C704
C705
C706
1
5
6
10
MIC A
2 6

– JACK –


AV CONN
0 6 JACK PWB ASS'Y
YB20026C2
D1
D2
R3
R4
R5
R6
EARPHONE JACK
REMOTE JACK

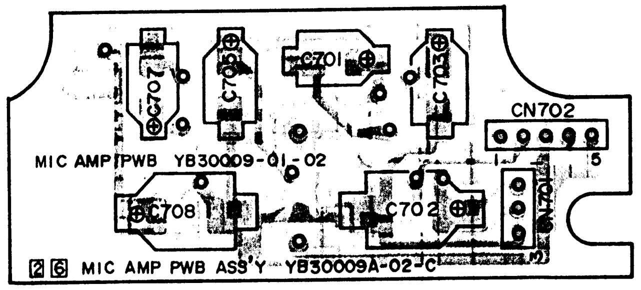
– MIC JACK –


MIC JACK
0 5
MIC JACK PWB ASS'Y
YB20026C1
CN1
1
3

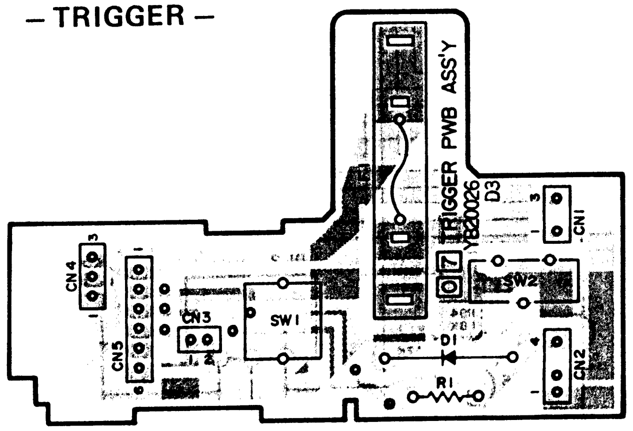
IRCUIT BOARDS

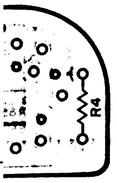
- MIC AMP -

– Front –

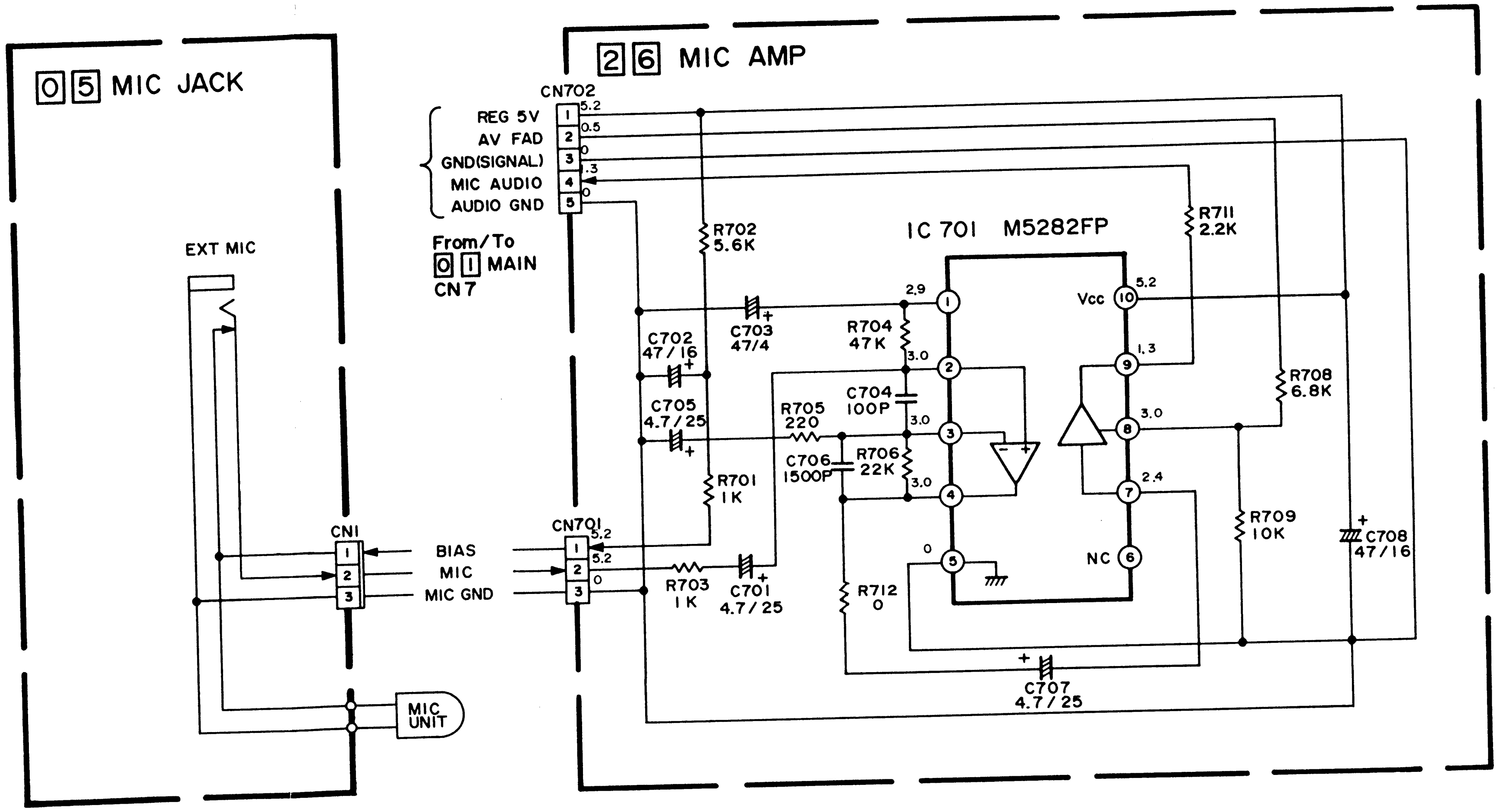

C707
C705
C701
C703
CN702
MIC AMP PWB YB30009-01-02
5
C708
C702
CN701
26 MIC AMP PWB ASS'Y YB30009A-02-C

– TRIGGER –

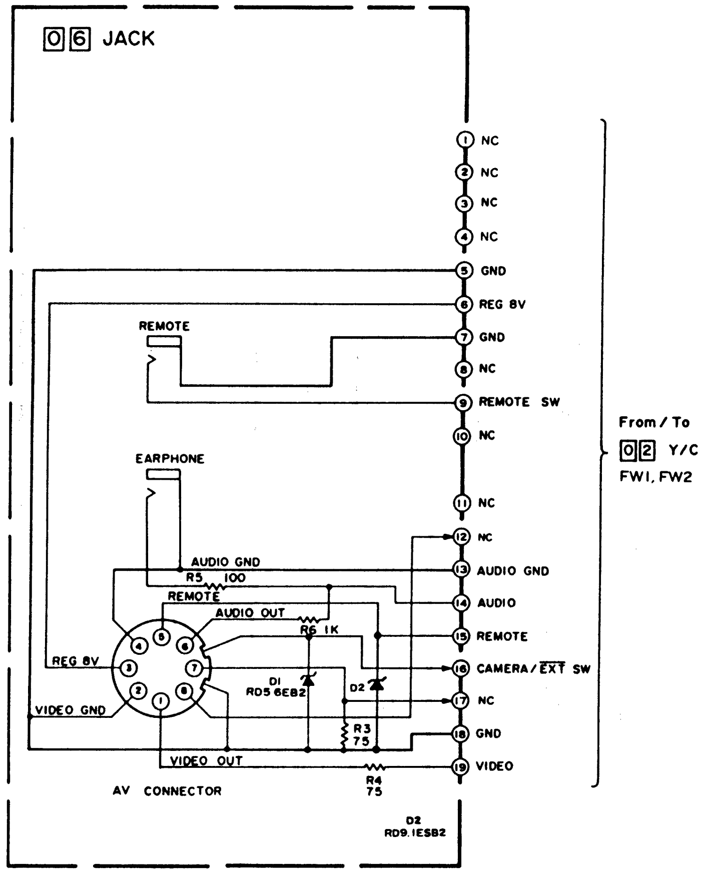

TRIGGER PWB ASS'Y
07
YB20026
D3
CN1
CN4
CN5
CN3
SW1
SW2
D1
R1
CN2



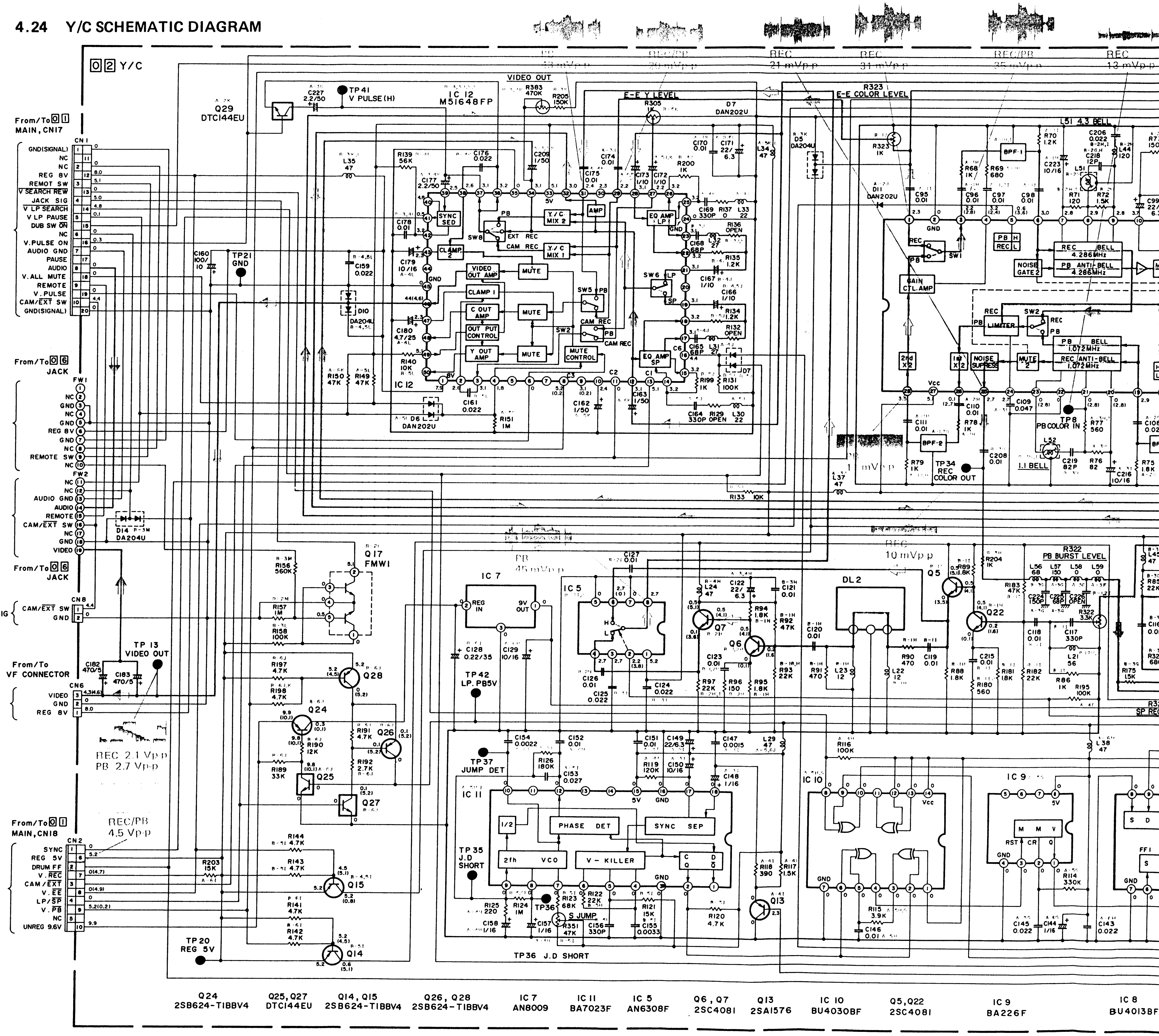
4.22 MIC JACK & MIC AMP SCHEMATIC DIAGRAM

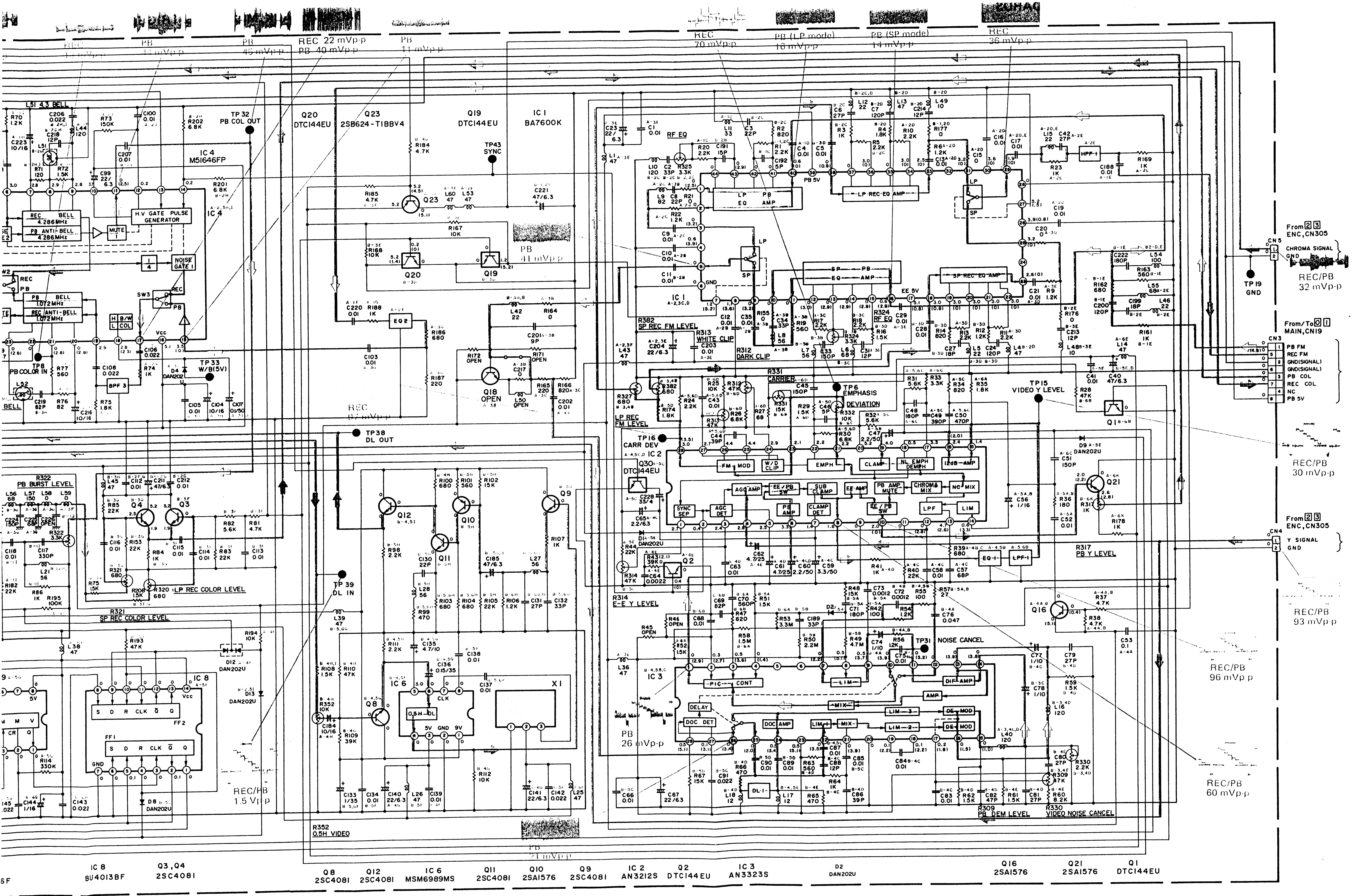

05 MIC JACK
EXT MIC
CN1
1
2
3
BIAS
MIC
MIC GND
MIC UNIT
26 MIC AMP
CN702
REG 5V
AV FAD
GND(SIGNAL)
MIC AUDIO
AUDIO GND
5.2
0.5
0
1.3
0
From/To
01 MAIN
CN7
R702
5.6K
IC 701 M5282FP
R711
2.2K
C702
47/16
C703
47/4
R704
47K
2.9
3.0
Vcc
5.2
1.3
R708
6.8K
C705
4.7/25
R705
220
C704
100P
3.0
3.0
C706
1500P
R706
22K
3.0
2.4
R701
1K
CN701
5.2
5.2
0
R703
1K
C701
4.7/25
R712
0
0
NC
R709
10K
C708
47/16
C707
4.7/25

4.23 JACK SCHEMATIC DIAGRAM


06 JACK
NC
GND
REG 8V
REMOTE SW
AUDIO GND
AUDIO
REMOTE
CAMERA/EXT SW
VIDEO
REMOTE
EARPHONE
AUDIO GND
R5 100
AUDIO OUT
R6 1K
D1 RD5.6EB2
D2
R3 75
R4 75
VIDEO GND
VIDEO OUT
AV CONNECTOR
D2 RD9.1ESB2
From / To 02 Y/C FW1, FW2

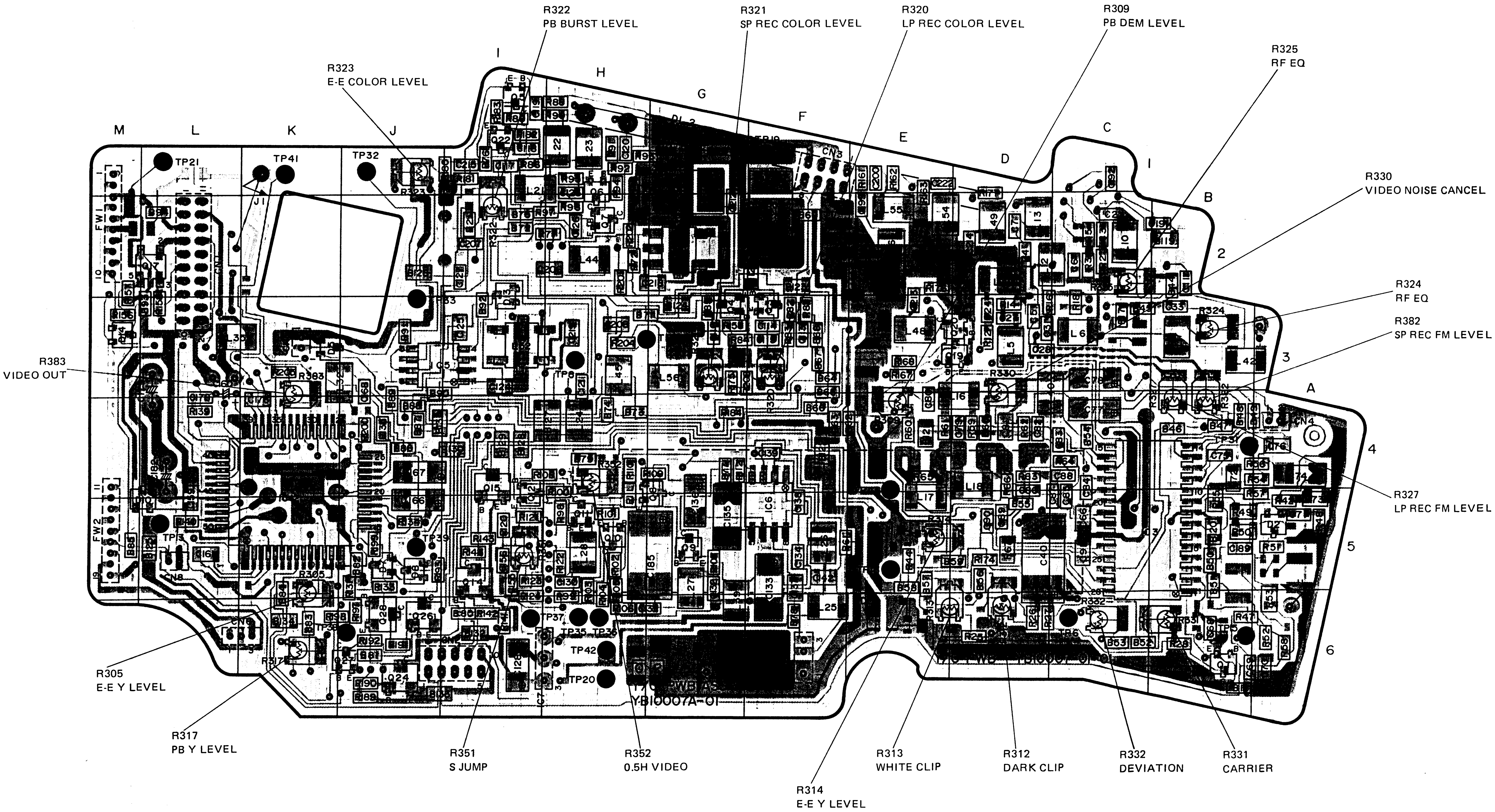
4.24 Y/C SCHEMATIC DIAGRAM


02 Y/C
From/To 01 MAIN, CN17
GND(SIGNAL)
REG 8V
REMOT SW
V SEARCH REW
JACK SIG
V LP SEARCH
V LP PAUSE
DUB SW ON
V.PULSE ON
AUDIO GND
PAUSE
AUDIO
V.ALL MUTE
REMOTE
V.PULSE
CAM/EXT SW
From/To 06 JACK
From/To VF CONNECTOR
JIG
From/To 01 MAIN, CN18
SYNC
REG 5V
DRUM FF
V.REC
CAM/EXT
V.EE
LP/SP
V.PB
UNREG 9.6V
Q29 DTC144EU
TP41 V PULSE (H)
IC 12 M51648FP
VIDEO OUT
E-E Y LEVEL
R305
D7 DAN202U
D5 DA204U
R323 E-E COLOR LEVEL
SYNC SEP
CLAMP 2
CLAMP 1
VIDEO OUT AMP
C OUT AMP
OUT PUT CONTROL
Y OUT AMP
MUTE
MUTE CONTROL
Y/C MIX 2
Y/C MIX 1
AMP
EQ AMP LP
EQ AMP SP
TP21 GND
D10 DA204U
D6 DAN202U
D14 DA204U
D11 DAN202U
GAIN CTL. AMP
NOISE GATE 2
REC BELL 4.286MHz
PB ANTI-BELL 4.286MHz
LIMITER
PB BELL 1.072MHz
REC ANTI-BELL 1.072MHz
NOISE SUPRESS
MUTE 2
2nd X2
1st X2
BPF-1
BPF-2
L51 4.3 BELL
TP8 PB COLOR IN
TP34 REC COLOR OUT
1.1 BELL
REC 10 mVp-p
PB 45 mVp-p
R322 PB BURST LEVEL
DL 2
Q5
Q22
Q17 FMW1
TP 13 VIDEO OUT
REC 2.1 Vp-p
PB 2.7 Vp-p
REC/PB 4.5 Vp-p
IC 7
IC 5
Q7
Q6
TP42 LP. PB5V
Q28
Q24
Q26
Q25
Q27
Q15
Q14
TP20 REG 5V
TP37 JUMP DET
IC 11
PHASE DET
SYNC SEP
2fh VCO
V-KILLER
TP 35 J.D SHORT
TP36 S JUMP
TP36 J.D SHORT
Q13
IC 10
IC 9
IC 8
Q24 2SB624-T1BBV4
Q25, Q27 DTC144EU
Q14, Q15 2SB624-T1BBV4
Q26, Q28 2SB624-T1BBV4
IC 7 AN8009
IC 11 BA7023F
IC 5 AN6308F
Q6, Q7 2SC4081
Q13 2SA1576
IC 10 BU4030BF
Q5, Q22 2SC4081
IC 9 BA226F
IC 8 BU4013BF


REC 22 mVp-p
PB 40 mVp-p
PB 45 mVp-p
REC 70 mVp-p
PB (LP mode) 18 mVp-p
PB (SP mode) 14 mVp-p
REC 36 mVp-p
L51 4.3 BELL
TP 32 PB COL OUT
IC 4 M51646FP
H.V GATE PULSE GENERATOR
REC BELL 4.286MHz
PB ANTI-BELL 4.286MHz
MUTE
NOISE GATE I
SW3
PB BELL 1.072MHz
REC ANTI-BELL 1.072MHz
BPF 3
TP8 PB COLOR IN
TP 33 W/B(5V)
Q20 DTC144EU
Q23 2SB624-T1BBV4
Q19 DTC144EU
IC 1 BA7600K
TP43 SYNC
PB 41 mVp-p
EQ 2
Q18 OPEN
REC 67 mVp-p
TP38 DL OUT
RF EQ
LP PB EQ AMP
LP-REC-EQ AMP
HPF-1
SP PB EQ AMP
SP REC EQ AMP
R382 SP REC FM LEVEL
R313 WHITE CLIP
R312 DARK CLIP
R324 RF EQ
R331 CARRIER
TP6 EMPHASIS DEVIATION
TP15 VIDEO Y LEVEL
LP REC FM LEVEL
TP16 CARR DEV
IC 2
FM MOD
W/D CLIP
EMPH
CLAMP
NL EMPH DEMPH
12dB AMP
AGC AMP
EE/PB SW
SUB CLAMP
EE AMP
PB AMP MUTE
CHROMA MIX
NC MIX
SYNC SEP
AGC DET
PB AMP
CLAMP DET
EE/PB SW
LPF
LIM
EQ-1
LPF-1
R317 PB Y LEVEL
R314 E-E Y LEVEL
R322 PB BURST LEVEL
R320 LP REC COLOR LEVEL
R321 SP REC COLOR LEVEL
TP 39 DL IN
IC 6
0.5H-DL
CLK
5V GND 9V
X1
IC 8
FF1
FF2
S D R CLK Q̄ Q
DAN202U
REC/PB 1.5 Vp-p
R352 0.5H VIDEO
PB 21 mVp-p
IC 3
PIC CONT
LIM
DIF AMP
AMP
MIX
LIM-3
LIM-2
DE MOD
DELAY
DOC DET
DOC AMP
DL-1
TP31 NOISE CANCEL
PB 26 mVp-p
R309 PB DEM LEVEL
R330 VIDEO NOISE CANCEL
From 23 ENC, CN305
CN5
CHROMA SIGNAL
GND
REC/PB 32 mVp-p
TP19 GND
From/To 01 MAIN, CN19
CN3
PB FM
REC FM
GND(SIGNAL)
GND(SIGNAL)
PB COL
REC COL
NC
PB 5V
REC/PB 30 mVp-p
CN4
Y SIGNAL
GND
REC/PB 93 mVp-p
REC/PB 96 mVp-p
REC/PB 60 mVp-p
IC 8 BU4013BF
Q3,Q4 2SC4081
Q8 2SC4081
Q12 2SC4081
IC 6 MSM6989MS
Q11 2SC4081
Q10 2SA1576
Q9 2SC4081
IC 2 AN3212S
Q2 DTC144EU
IC 3 AN3323S
D2 DAN202U
Q16 2SA1576
Q21 2SA1576
Q1 DTC144EU

4.25 Y/C CIRCUIT BOARD

— Rear —


R322
PB BURST LEVEL
R321
SP REC COLOR LEVEL
R320
LP REC COLOR LEVEL
R309
PB DEM LEVEL
R325
RF EQ
R323
E-E COLOR LEVEL
R330
VIDEO NOISE CANCEL
R324
RF EQ
R382
SP REC FM LEVEL
R383
VIDEO OUT
R327
LP REC FM LEVEL
R305
E-E Y LEVEL
R317
PB Y LEVEL
R351
S JUMP
R352
0.5H VIDEO
R313
WHITE CLIP
R312
DARK CLIP
R332
DEVIATION
R331
CARRIER
R314
E-E Y LEVEL
M
L
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
TP21
TP41
TP32
TP8
TP39
TP37
TP35
TP36
TP42
TP20
TP6
TP31
CN3
CN4
CN8
FW1
FW2
Y/C PWB ASS'Y
YB10007A-01

330
IDEO NOISE CANCEL

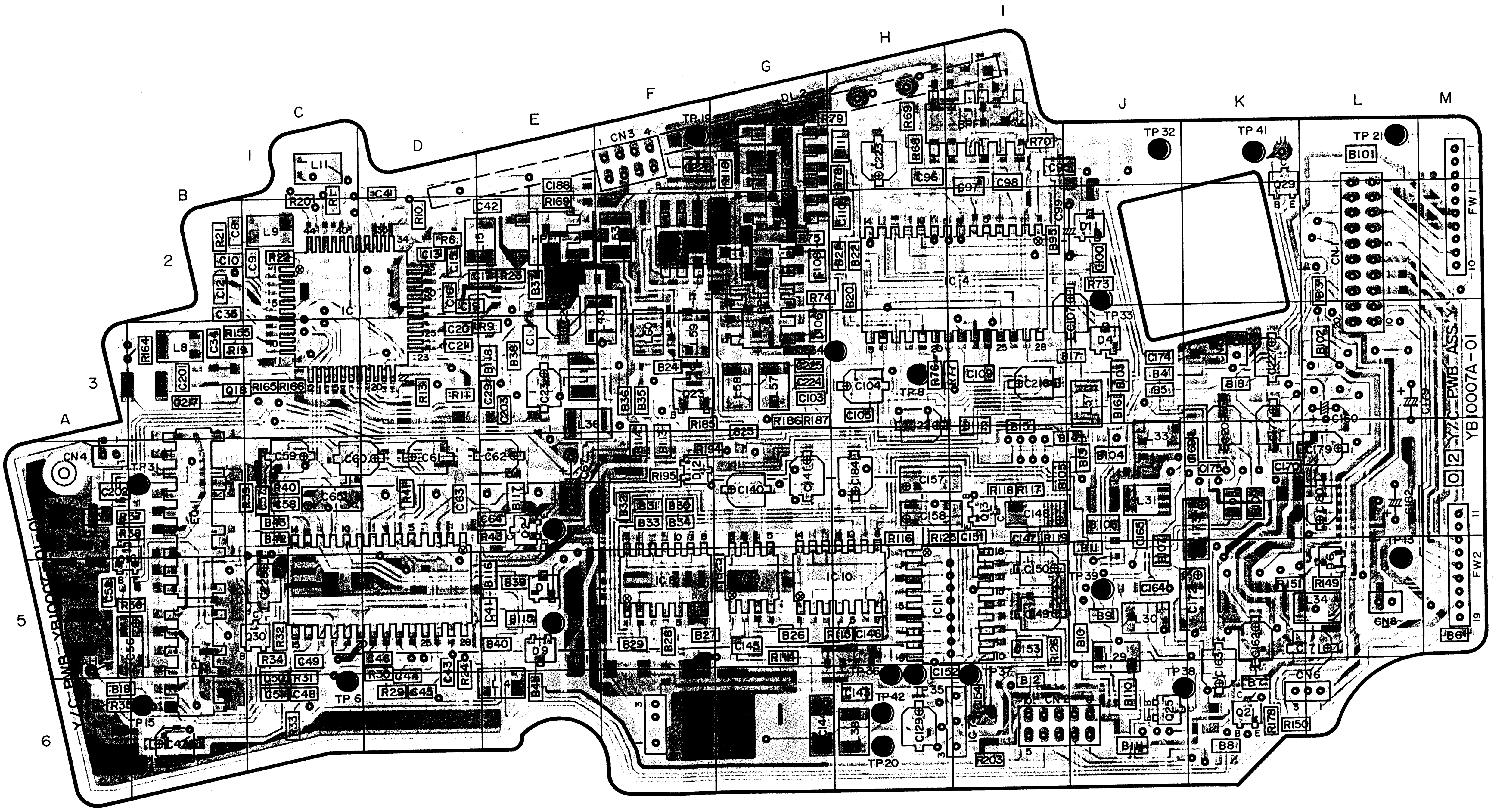
R324
RF EQ

R382
SP REC FM LEVEL

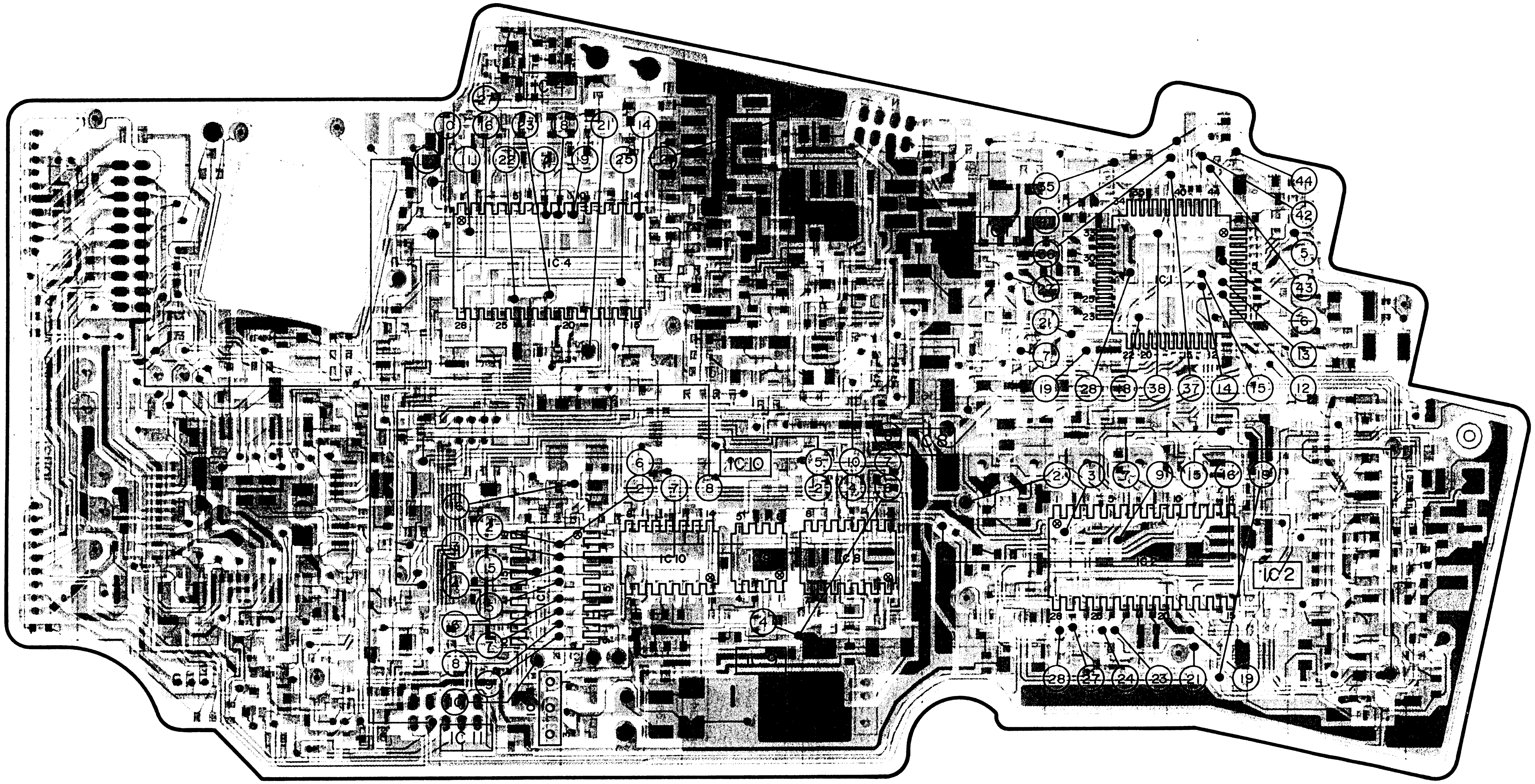
4

R327
LP REC FM LEVEL

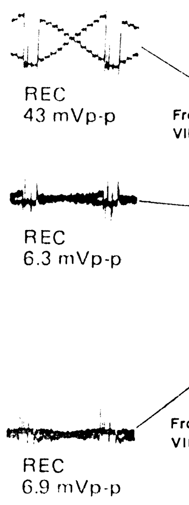
— Front —


A
B
C
D
E
F
G
H
I
J
K
L
M
2
3
4
5
6
CN1
CN2
CN3
CN4
CN6
CN8
FW1
FW2
TP6
TP8
TP15
TP19
TP20
TP21
TP31
TP32
TP33
TP35
TP37
TP38
TP39
TP41
TP42
TP43
IC4
IC8
IC10
IC11
DL2
L8
L9
L11
L30
L31
L33
L34
Q18
Q21
Q23
Q25
Q29
D4
D9
D12
B101
Y/C PWB ASS'Y
YB10007A-01

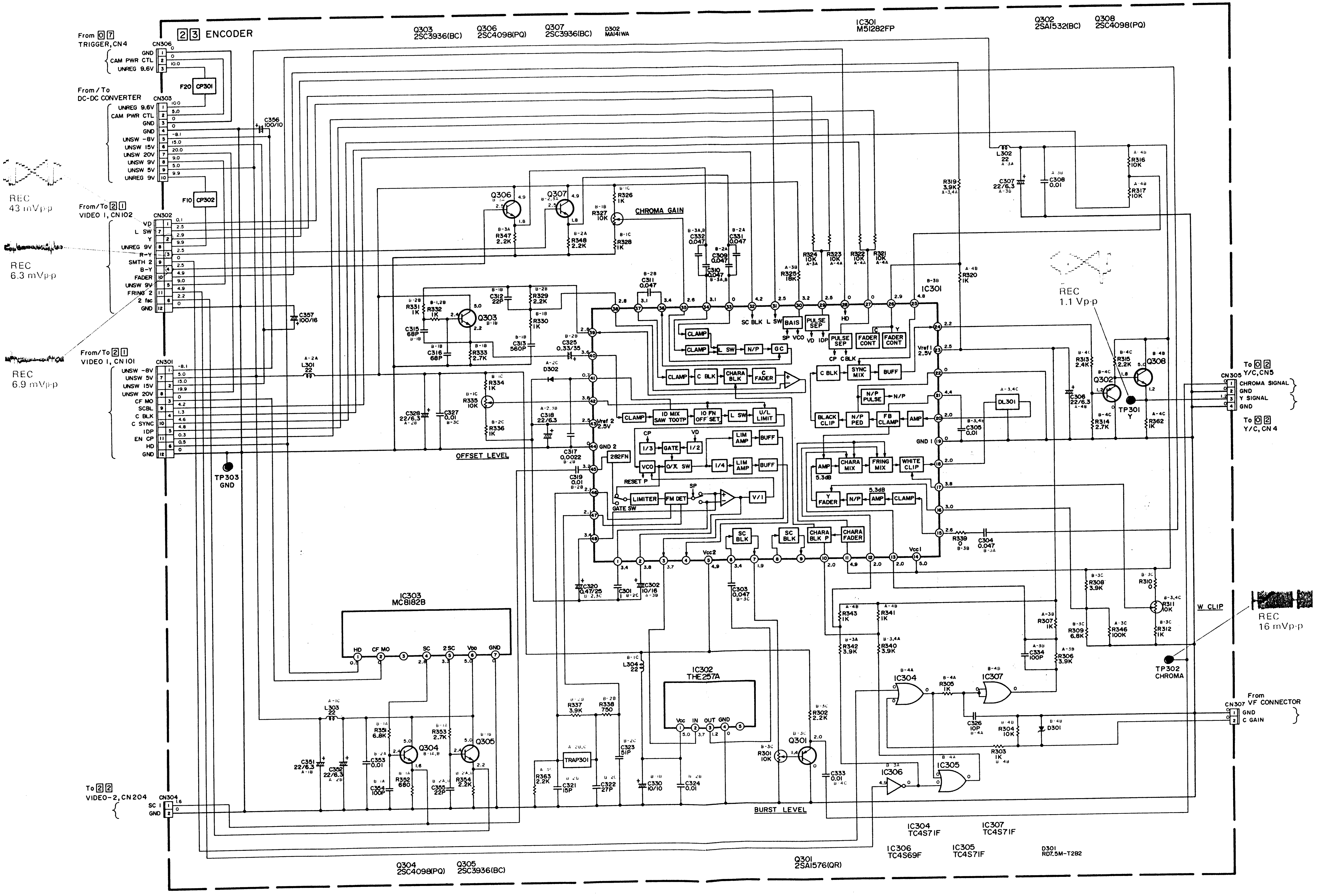
4.26 Y/C BOARD THROUGH HOLE LOCATION


IC4
IC1
IC10
IC8
IC2
IC11
10
16
23
18
21
14
11
22
24
19
25
27
55
44
42
5
43
6
13
12
15
14
37
38
48
28
19
7
21
6
2
7
8
5
10
24
3
9
16
28
27
24
23
21
19

4.27

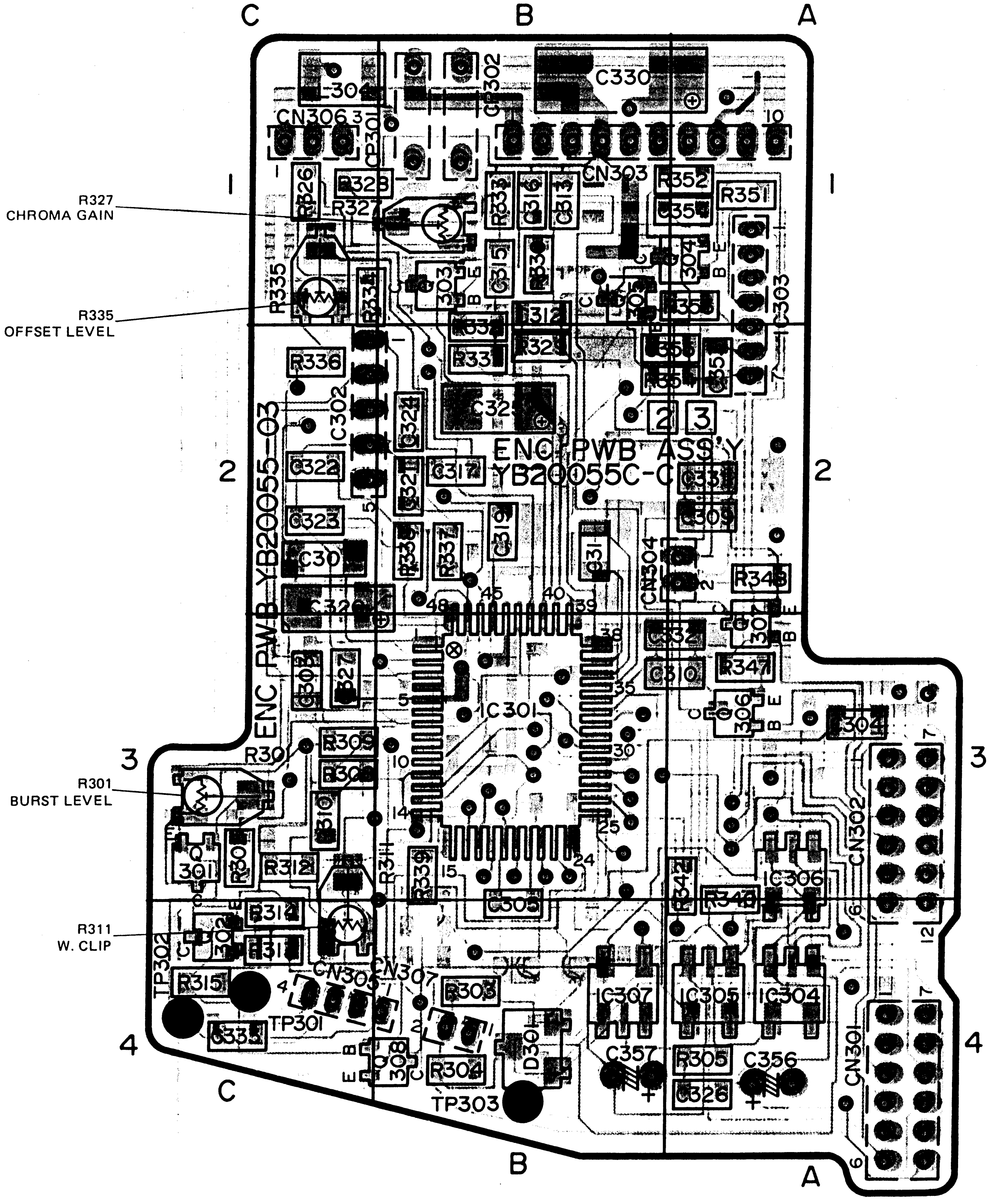

Fr
TI
Fr
DO
REC
43 mVp-p
Fr
VI
REC
6.3 mVp-p
Fr
VI
REC
6.9 mVp-p
To
VIDI

4.27 ENCORDER SCHEMATIC DIAGRAM

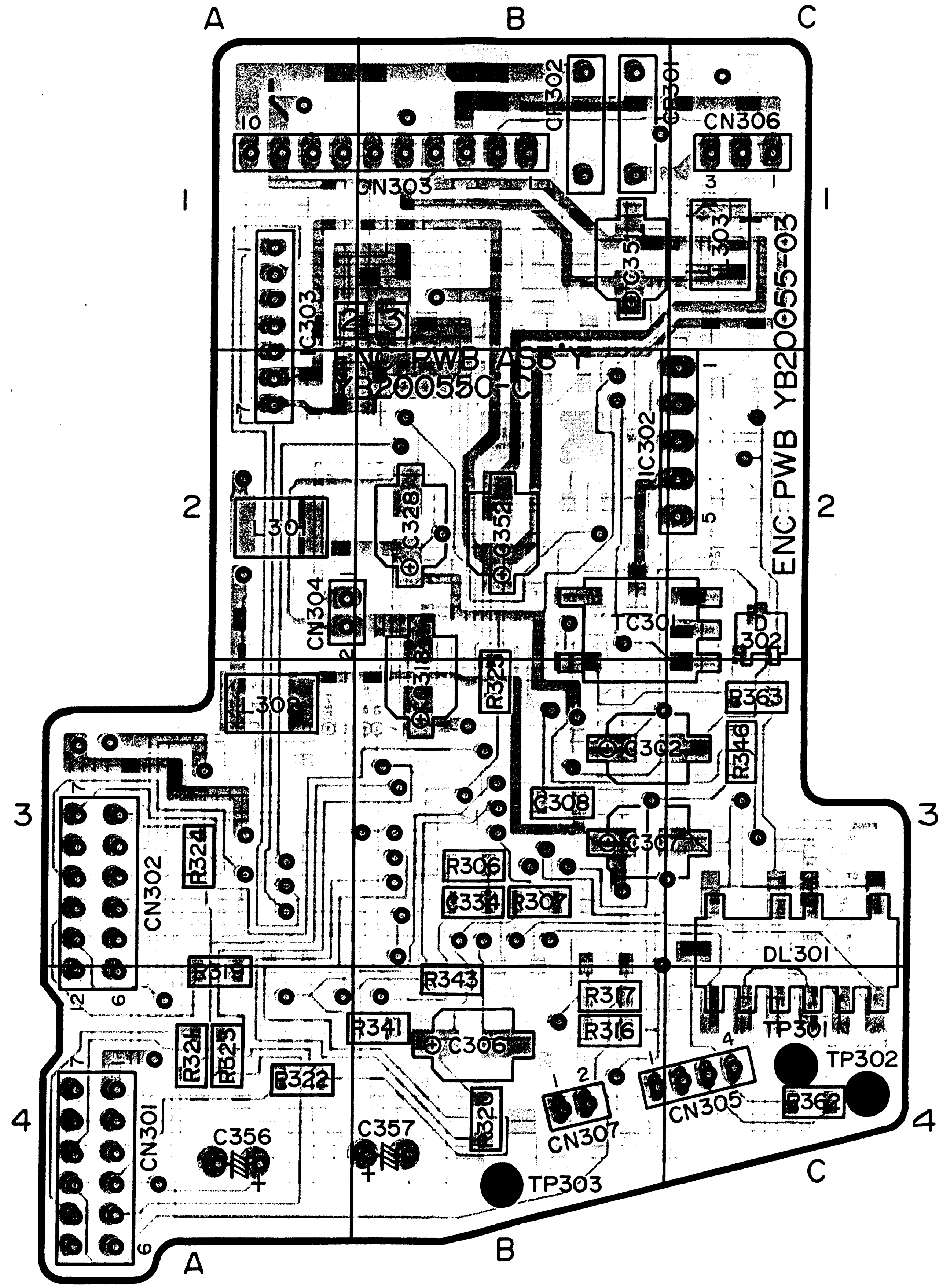

23 ENCODER
From 07 TRIGGER, CN4
CN306
GND
CAM PWR CTL
UNREG 9.6V
F20 CP301
From/To DC-DC CONVERTER
CN303
UNREG 9.6V
CAM PWR CTL
GND
GND
UNSW -8V
UNSW 15V
UNSW 20V
UNSW 9V
UNSW 5V
UNREG 9V
F10 CP302
REC 43 mVp-p
From/To 21 VIDEO 1, CN102
CN302
VD
L SW
Y
UNREG 9V
R-Y
SMTH 2
B-Y
FADER
UNSW 9V
FRING 2
2 fsc
GND
REC 6.3 mVp-p
From/To 21 VIDEO 1, CN101
CN301
UNSW -8V
UNSW 5V
UNSW 15V
UNSW 20V
CF MO
SCBL
C BLK
C SYNC
IDP
EN CP
HD
GND
REC 6.9 mVp-p
TP303 GND
To 22 VIDEO-2, CN204
CN304
SC
GND
Q303 2SC3936(BC)
Q306 2SC4098(PQ)
Q307 2SC3936(BC)
D302 MA141WA
IC301 M51282FP
Q302 2SA1532(BC)
Q308 2SC4098(PQ)
C356 100/10
C357 100/16
CHROMA GAIN
R326 1K
R327 10K
R328 1K
R347 2.2K
R348 2.2K
C332 0.047
C331 0.047
C309 0.047
C310 0.047
C311 0.047
R324 10K
R323 10K
R322 10K
R321 10K
R325 18K
R319 3.9K
L302 22
C307 22/6.3
C308 0.01
R316 10K
R317 10K
R320 1K
REC 1.1 Vp-p
R331 1K
R332 1K
C312 22P
R329 2.2K
R330 1K
C315 68P
C316 68P
R333 2.7K
C313 560P
C325 0.33/35
L301 22
D302
R334 1K
R335 10K
R336 1K
C328 22/6.3
C327 0.01
C318 22/6.3
C317 0.0022
C319 0.01
OFFSET LEVEL
SC BLK
L SW
BAIS
PULSE SEP
SP VCO
VD IDP
HD
CLAMP
SW
N/P
GC
PULSE SEP
FADER CONT
FADER CONT
CP CBLK
Vref1 2.5V
C BLK
CHARA BLK
C FADER
SYNC MIX
BUFF
ID MIX SAW TOOTP
IO FN OFF SET
U/L LIMIT
Vref2 2.5V
N/P PULSE
BLACK CLIP
N/P PED
FB CLAMP
AMP
DL301
C305 0.01
GND 1
GND 2
CP
VD
1/3
GATE
1/2
LIM AMP
BUFF
282FN
VCO
O/X SW
1/4
RESET P
SP
LIMITER
FM DET
V/I
GATE SW
CHARA MIX
FRING MIX
WHITE CLIP
5.3dB
Y FADER
CHARA BLK P
CHARA FADER
Vcc2
Vcc1
R339 0
C304 0.047
R313 2.4K
R315 2.2K
Q302
Q308
TP301 Y
C306 22/6.3
R314 2.7K
R362 1K
To 02 Y/C, CN5
CN305
CHROMA SIGNAL
GND
Y SIGNAL
GND
To 02 Y/C, CN4
C320 0.47/25
C301 1
C302 10/16
C303 0.047
IC303 MC8182B
HD
CF MO
SC
2SC
Vdd
GND
L304 22
IC302 THE257A
Vcc
IN
OUT
GND
R343 1K
R341 1K
R342 3.9K
R340 3.9K
R308 3.9K
R310 0
R311 10K
W CLIP
REC 16 mVp-p
R307 1K
R309 6.8K
R346 100K
R312 1K
C334 100P
R306 3.9K
TP302 CHROMA
IC304
R305 1K
IC307
C326 10P
R304 10K
D301
R303 1K
From CN307 VF CONNECTOR
GND
C GAIN
L303 22
R351 6.8K
Q304
R353 2.7K
Q305
C351 22/6.3
C352 22/6.3
C353 0.01
C354 100P
R352 680
C355 22P
R354 2.2K
R337 3.9K
R338 750
TRAP301
C323 51P
R363 2.2K
C321 15P
C322 27P
C330 10/10
C324 0.01
R302 2.2K
Q301
R301 10K
C333 0.01
IC306
IC305
BURST LEVEL
IC304 TC4S71F
IC307 TC4S71F
IC306 TC4S69F
IC305 TC4S71F
D301 RD7.5M-T2B2
Q301 2SA1576(QR)
Q304 2SC4098(PQ)
Q305 2SC3936(BC)

4.28 ENCORDER CIRCUIT BOARD

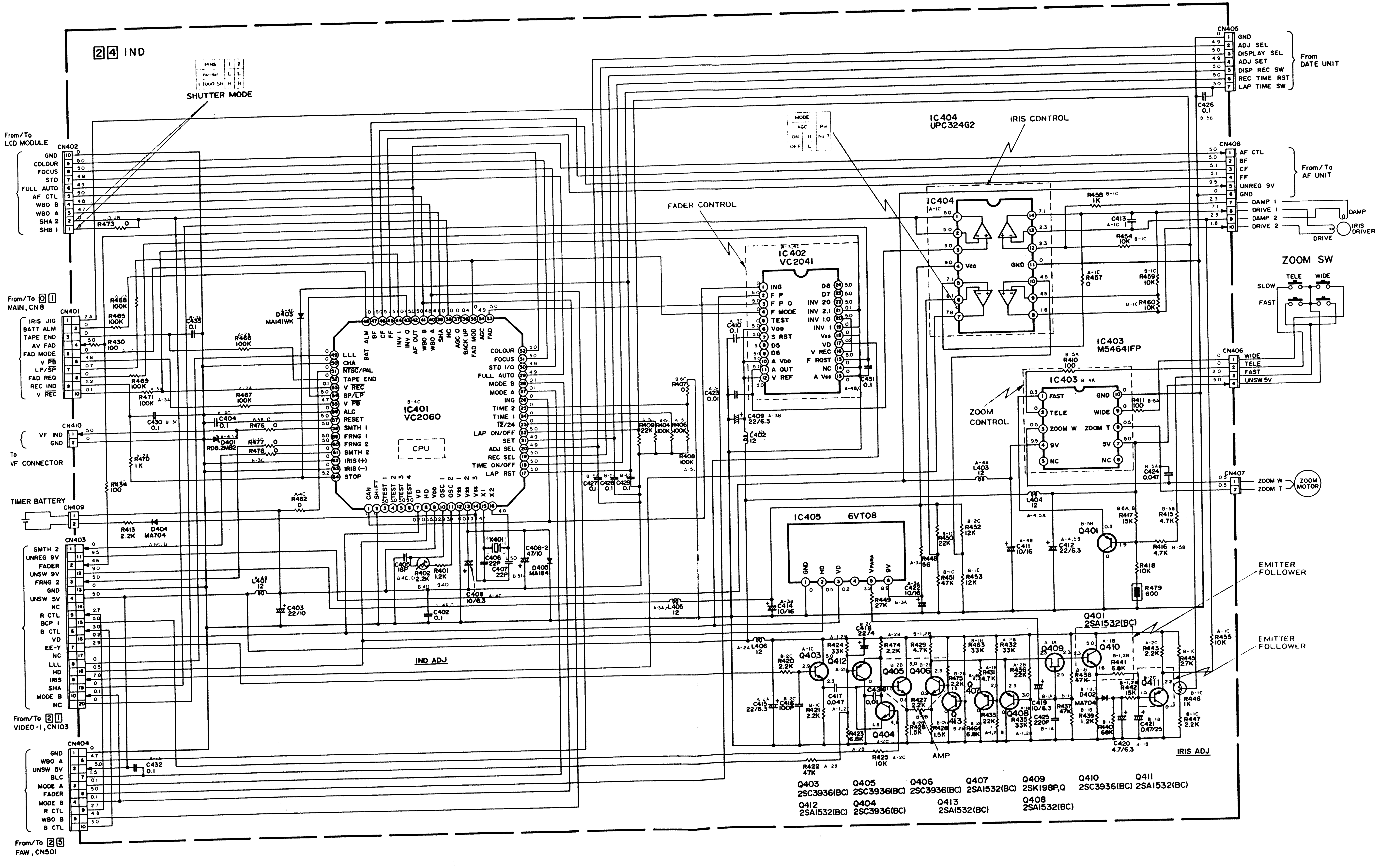
— Rear —


C
B
A
1
2
3
4
R327
CHROMA GAIN
R335
OFFSET LEVEL
R301
BURST LEVEL
R311
W. CLIP
ENC PWB ASS'Y
YB20055C-C
ENC PWB YB20055-03
IC301
IC302
IC303
IC304
IC305
IC306
IC307
CN301
CN302
CN303
CN304
CN305
CN306
CN307
C330
C320
C357
C356
L304
TP301
TP302
TP303
D301

— Front —


A
B
C
1
2
3
4
ENC PWB ASS'Y
YB20055C-C
ENC PWB YB20055-03
IC301
IC302
IC303
CN301
CN302
CN303
CN304
CN305
CN306
CN307
L301
L302
DL301
C356
C357
TP301
TP302
TP303

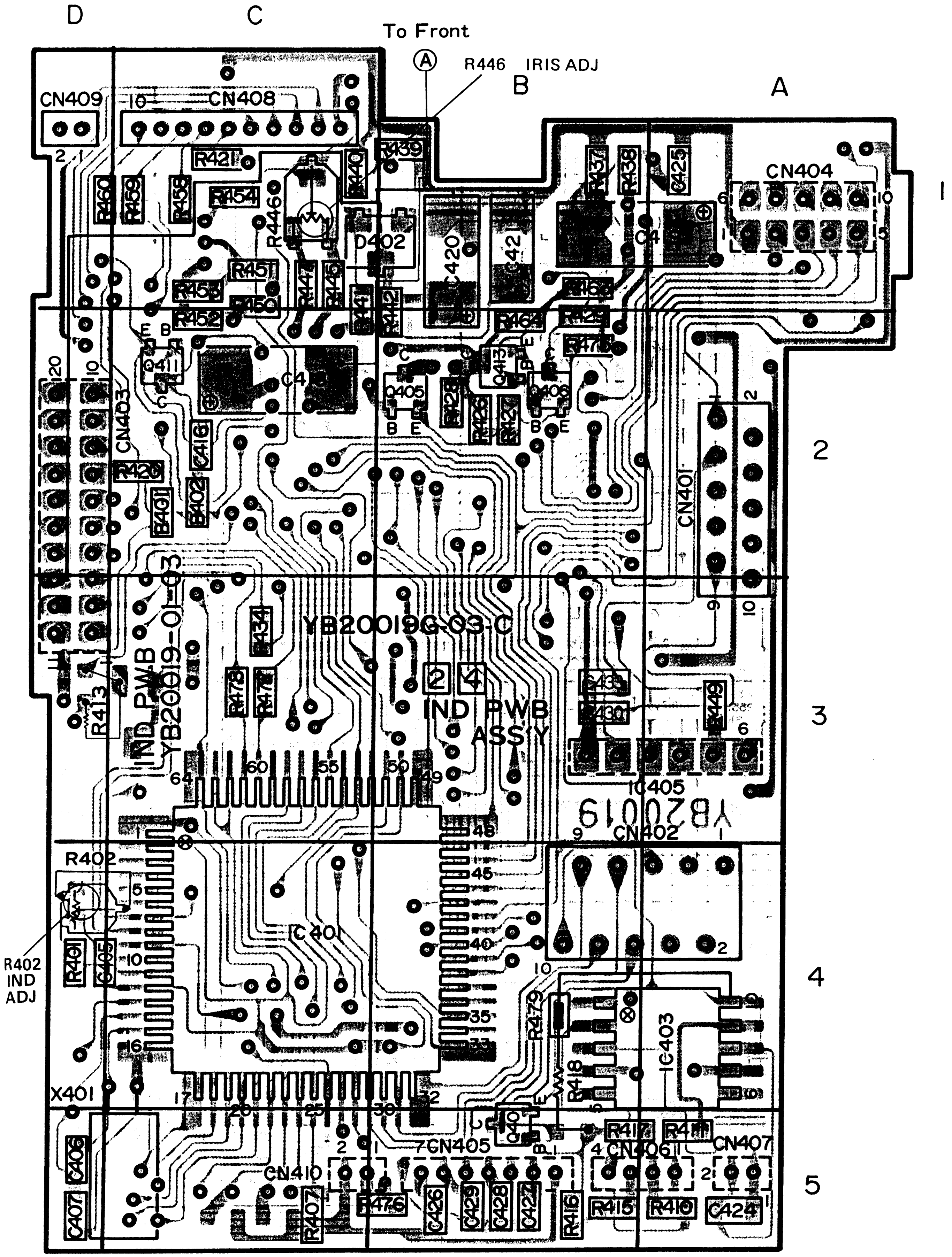
4.29 INDICATOR SCHEMATIC DIAGRAM



2 4 IND
SHUTTER MODE
From/To LCD MODULE
CN402
GND
COLOUR
FOCUS
STD
FULL AUTO
AF CTL
WBO B
WBO A
SHA 2
SHB 1
R473
From/To 0 1 MAIN, CN8
CN401
IRIS JIG
BATT ALM
TAPE END
AV FAD
FAD MODE
V PB
LP/SP
FAD REQ
REC IND
V REC
CN410
VF IND
GND
To VF CONNECTOR
TIMER BATTERY
CN409
D404 MA704
CN403
SMTH 2
UNREG 9V
FADER
UNSW 9V
FRNG 2
GND
UNSW 5V
NC
R CTL
BCP 1
B CTL
VD
EE-Y
NC
LLL
HD
IRIS
SHA
MODE B
NC
From/To 2 1 VIDEO-1, CN103
CN404
GND
WBO A
UNSW 5V
BLC
MODE A
FADER
MODE B
R CTL
WBO B
B CTL
From/To 2 5 FAW, CN501
D403 MA141WK
D401 RD6.2MB2
IC401 VC2060
CPU
LLL
CHA
NTSC/PAL
TAPE END
V REC
SP/LP
V PB
ALC
RESET
SMTH 1
FRNG 1
FRNG 2
SMTH 2
IRIS (+)
IRIS (−)
STOP
COLOUR
FOCUS
STD I/O
FULL AUTO
MODE B
MODE A
ING
TIME 2
TIME 1
12/24
LAP ON/OFF
SET
ADJ SEL
REC SEL
TIME ON/OFF
LAP RST
X401
D405 MA184
L401
IND ADJ
FADER CONTROL
IC402 VC2041
ING
F P
F P O
F MODE
TEST
VDD
S RST
D5
D6
A VDD
A OUT
V REF
D8
D7
INV 20
INV 2.1
INV 1.0
INV 1
Vss
VD
V REC
F RQST
NC
A Vss
IC404 UPC324G2
IRIS CONTROL
Vcc
GND
CN405
GND
ADJ SEL
DISPLAY SEL
ADJ SET
DISP REC SW
REC TIME RST
LAP TIME SW
From DATE UNIT
CN408
AF CTL
BF
CF
FF
UNREG 9V
GND
DAMP 1
DRIVE 1
DAMP 2
DRIVE 2
From/To AF UNIT
DAMP
IRIS DRIVER
DRIVE
ZOOM SW
TELE
WIDE
SLOW
FAST
IC403 M54641FP
ZOOM CONTROL
FAST
TELE
ZOOM W
9V
NC
GND
WIDE
ZOOM T
5V
CN406
WIDE
TELE
FAST
UNSW 5V
CN407
ZOOM W
ZOOM T
ZOOM MOTOR
IC405 6VT08
GND
HD
VD
VPARA
9V
EMITTER FOLLOWER
EMITTER FOLLOWER
Q401 2SA1532(BC)
AMP
IRIS ADJ
Q403 2SC3936(BC)
Q405 2SC3936(BC)
Q406 2SC3936(BC)
Q407 2SA1532(BC)
Q409 2SK198P,Q
Q410 2SC3936(BC)
Q411 2SA1532(BC)
Q412 2SA1532(BC)
Q404 2SC3936(BC)
Q413 2SA1532(BC)
Q408 2SA1532(BC)

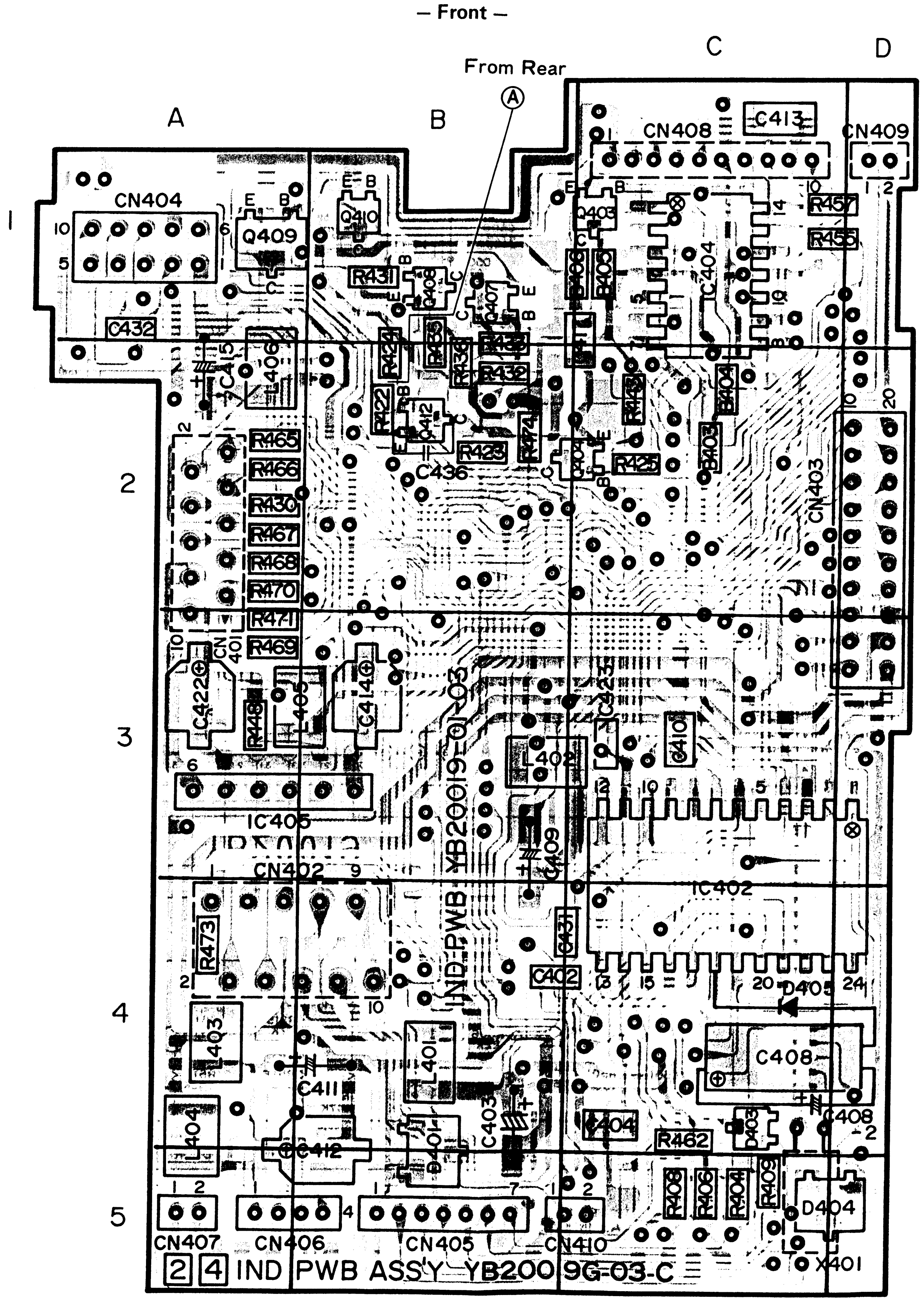
4.30 INDICATOR CIRCUIT BOARD

— Rear —



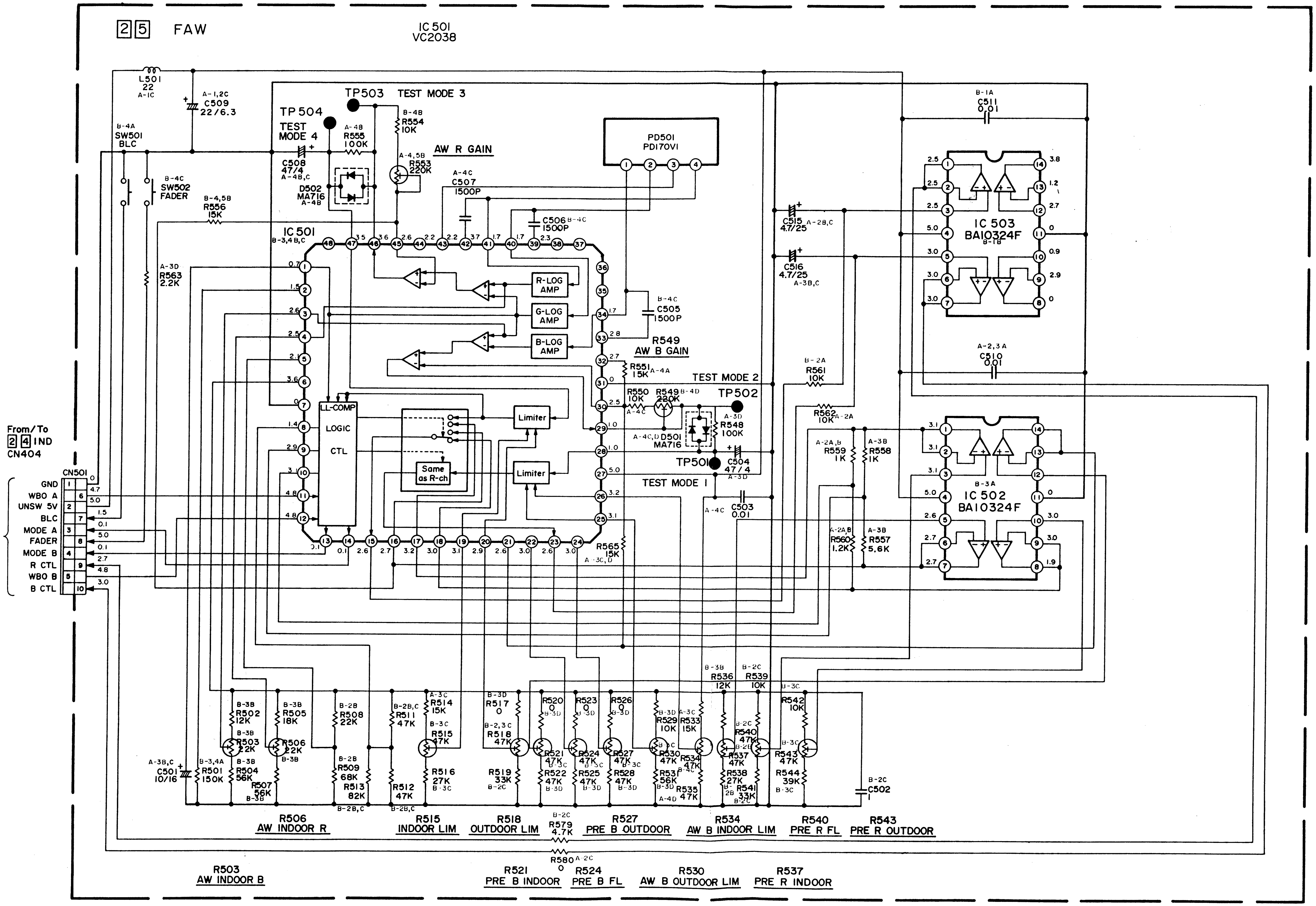
D
C
To Front
Ⓐ
R446 IRIS ADJ
B
A
CN409
CN408
CN404
1
2
3
4
5
CN403
CN401
IC405
CN402
IC401
IC403
R402
R402 IND ADJ
X401
CN410
CN405
CN406
CN407
YB20019G-03-C
2 4 IND PWB ASS'Y
IND PWB YB20019-01-03
D402
Q405
Q406
Q411

— Front —



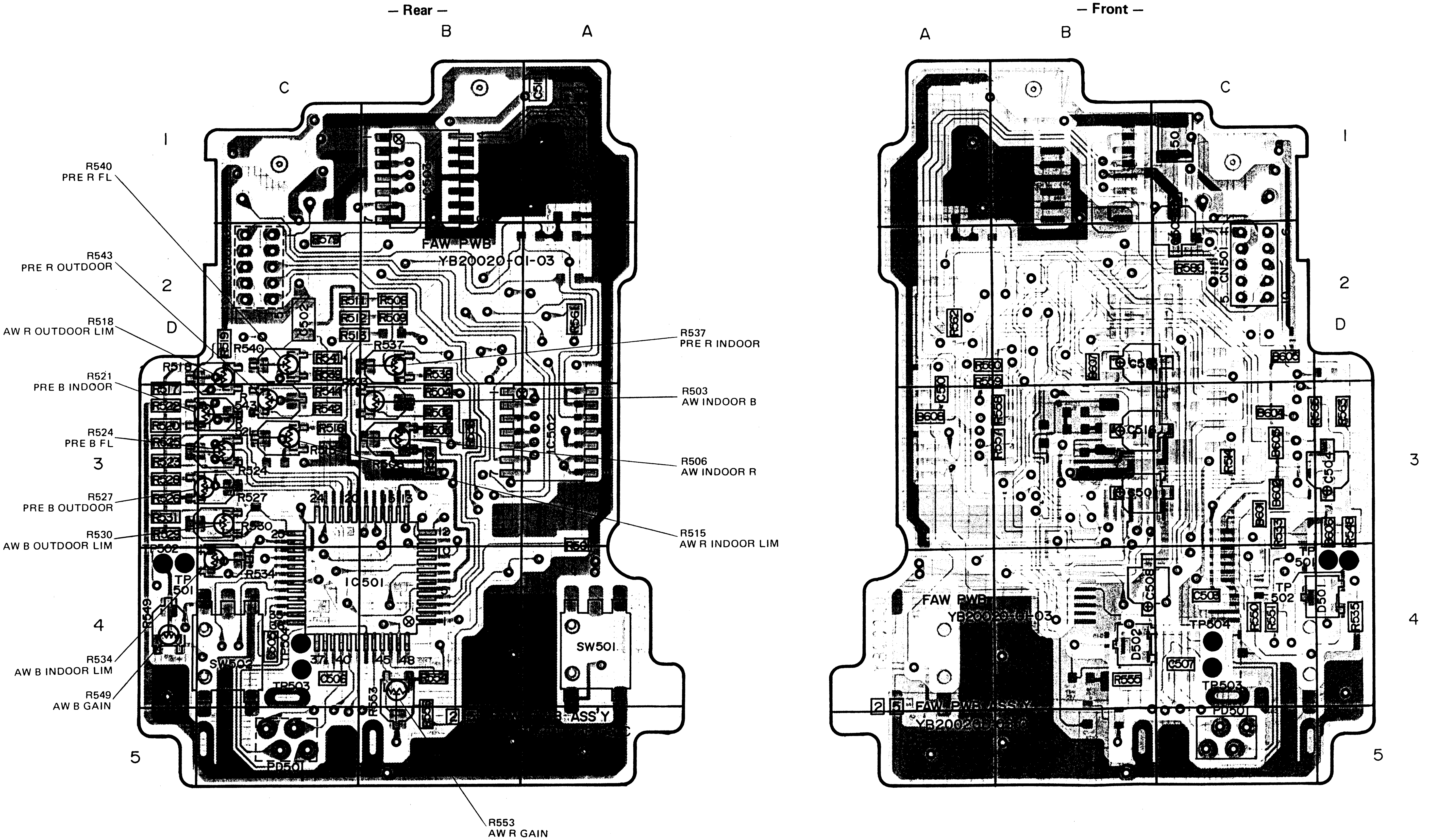
From Rear
Ⓐ
A
B
C
D
CN404
CN408
CN409
C413
1
2
3
4
5
Q409
Q410
Q403
IC404
CN403
IC405
CN402
IC402
IC403
D405
C408
D404
X401
CN407
CN406
CN405
CN410
2 4 IND PWB ASS'Y YB20019G-03-C
IND-PWB YB20019-01-03

4.31 FAW SCHEMATIC DIAGRAM



25 FAW
IC 501
VC2038
L501 22
C509 22/6.3
SW501 BLC
SW502 FADER
R556 15K
R563 2.2K
TP503 TEST MODE 3
TP504 TEST MODE 4
R555 100K
R554 10K
C508 47/4
D502 MA716
R553 220K
AW R GAIN
C507 1500P
PD501 PD170V1
C506 1500P
IC 501
R-LOG AMP
G-LOG AMP
B-LOG AMP
LL-COMP
LOGIC CTL
Limiter
Same as R-ch
C505 1500P
R549 AW B GAIN
R551 15K
TEST MODE 2
R550 10K
R549 220K
TP502
R548 100K
D501 MA716
TP501
C504 47/4
TEST MODE 1
C503 0.01
R565 15K
C511 0.01
IC 503 BA10324F
C515 4.7/25
C516 4.7/25
C510 0.01
R561 10K
R562 10K
R559 1K
R558 1K
IC 502 BA10324F
R560 1.2K
R557 5.6K
From/To 24 IND CN404
CN501
GND
WBO A
UNSW 5V
BLC
MODE A
FADER
MODE B
R CTL
WBO B
B CTL
C501 10/16
R501 150K
R502 12K
R503 22K
R504 56K
R505 18K
R506 22K
R507 56K
R508 22K
R509 68K
R513 82K
R511 47K
R512 47K
R514 15K
R515 47K
R516 27K
R517 0
R518 47K
R519 33K
R520 0
R521 47K
R522 47K
R523 0
R524 47K
R525 47K
R526 0
R527 47K
R528 47K
R529 10K
R530 47K
R531 56K
R533 15K
R534 47K
R535 47K
R536 12K
R539 10K
R537 47K
R538 27K
R540 47K
R541 33K
R542 10K
R543 47K
R544 39K
C502 1
R579 4.7K
R580 0
R506 AW INDOOR R
R515 INDOOR LIM
R518 OUTDOOR LIM
R527 PRE B OUTDOOR
R534 AW B INDOOR LIM
R540 PRE R FL
R543 PRE R OUTDOOR
R503 AW INDOOR B
R521 PRE B INDOOR
R524 PRE B FL
R530 AW B OUTDOOR LIM
R537 PRE R INDOOR

4.32 FAW CIRCUIT BOARD

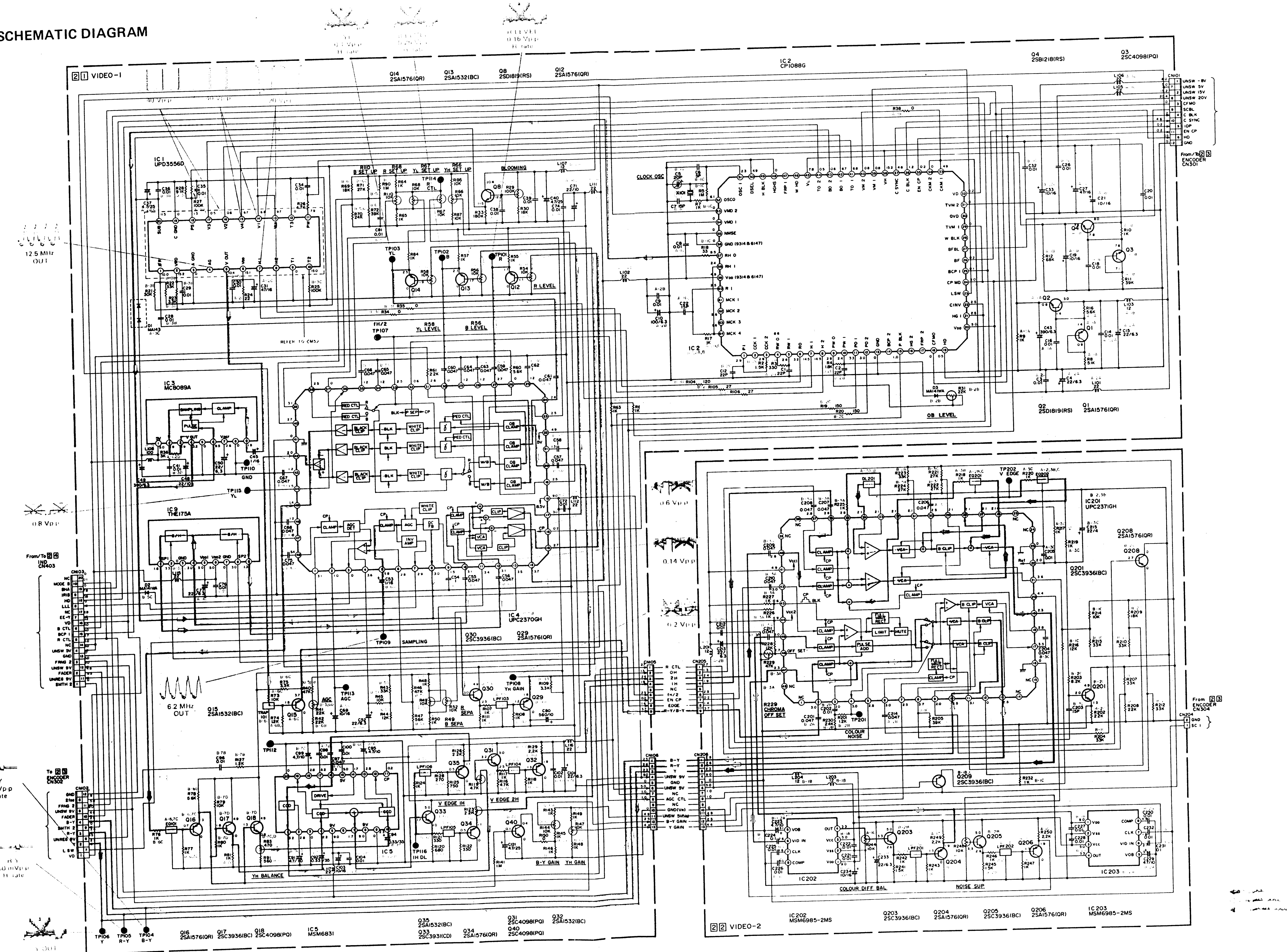


— Rear —

— Front —

A
B
C
D
1
2
3
4
5
R540
PRE R FL
R543
PRE R OUTDOOR
R518
AW R OUTDOOR LIM
R521
PRE B INDOOR
R524
PRE B FL
R527
PRE B OUTDOOR
R530
AW B OUTDOOR LIM
R534
AW B INDOOR LIM
R549
AW B GAIN
R537
PRE R INDOOR
R503
AW INDOOR B
R506
AW INDOOR R
R515
AW R INDOOR LIM
R553
AW R GAIN
FAW PWB
YB20020-01-03
IC501
SW501
SW502
TP501
TP502
TP503
TP504
PD501
CN501
D501
D502
FAW PWB ASS'Y
YB20020-

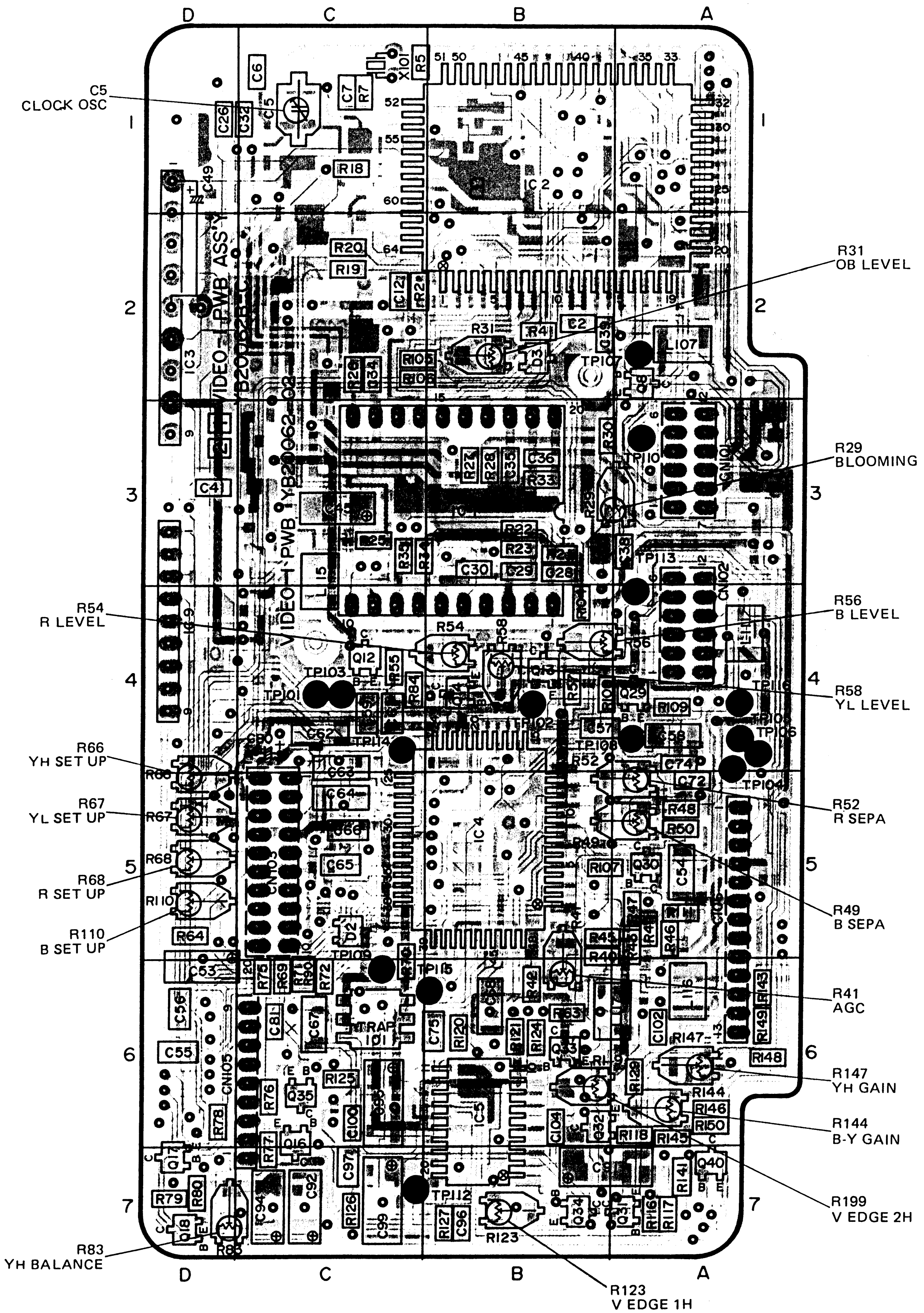
4.33 VIDEO SCHEMATIC DIAGRAM



2-1 VIDEO-1
2-2 VIDEO-2
IC1 UPD3556D
IC2 CP1088G
IC3 MC8089A
IC4 UPC2370GH
IC5 MSM6831
IC9 THE175A
IC201 UPC2371GH
IC202 MSM6985-2MS
IC203 MSM6985-2MS
Q1 2SA1576(QR)
Q2 2SD1819(RS)
Q3 2SC4098(PQ)
Q4 2SB1218(RS)
Q8 2SD1819(RS)
Q12 2SA1576(QR)
Q13 2SA1532(BC)
Q14 2SA1576(QR)
Q15 2SA1532(BC)
Q16 2SA1576(QR)
Q17 2SC3936(BC)
Q18 2SC4098(PQ)
Q29 2SA1576(QR)
Q30 2SC3936(BC)
Q31 2SC4098(PQ)
Q32 2SA1532(BC)
Q33 2SC3931(CD)
Q34 2SA1576(QR)
Q35 2SA1532(BC)
Q40 2SC4098(PQ)
Q201 2SC3936(BC)
Q203 2SC3936(BC)
Q204 2SA1576(QR)
Q205 2SC3936(BC)
Q206 2SA1576(QR)
Q208 2SA1576(QR)
Q209 2SC3936(BC)
CLOCK OSC
BLOOMING
R110 B SET UP
R68 R SET UP
R67 YL SET UP
R66 YH SET UP
R CTL
R LEVEL
R58 YL LEVEL
R56 B LEVEL
OB LEVEL
TP101 R
TP102 B
TP103 YL
TP107 fH/2
TP109 SAMPLING
TP110
TP112
TP113 AGC
TP115 YL
TP116 IH DL
TP201
TP202 V EDGE
TP104 B-Y
TP105 R-Y
TP106 Y
R108 YH GAIN
R49 B SEPA
R SEPA
V EDGE 1H
V EDGE 2H
B-Y GAIN
YH GAIN
YH BALANCE
R229 CHROMA OFF SET
COLOUR NOISE
COLOUR DIFF BAL
NOISE SUP
REFER TO CM52
12.5 MHz OUT
6.2 MHz OUT
0.8 Vp-p
0.6 Vp-p
0.14 Vp-p
0.2 Vp-p
0.16 Vp-p H rate
B-Y 50 mVp-p H rate
R-Y 50 mVp-p H rate
From/To 2-4 IND CN403
To 2-3 ENCODER CN302
From/To 2-3 ENCODER CN301
From 2-3 ENCODER CN304
CN101
CN102
CN103
CN105
CN106
CN204
CN205
CN206
UNSW -8V
UNSW 5V
UNSW 15V
UNSW 20V
CFMO
SCBL
C BLK
C SYNC
IDP
EN CP
HD
GND
NC
MODE B
SHA
IRIS
MD
LLL
EE-V
VD
B CTL
BCP 1
R CTL
UNSW 9V
FRNG 2
FADER
UNREG 9V
SMTH 2
B-Y
R-Y
L SW
R CTL
2H
1H
fH/2
EN CP
EDGE
R-Y/B-Y
Y
AGC CTL
GND(9V)
UNSW 5V(A)
B-Y GAIN
Y GAIN
SC 1
SAMPLING
CLAMP
PULSE
BLK
WHITE CLIP
BLACK CLIP
RED CTL
P SEP
OB CLAMP
W/B
AGC DET
INV AMP
DC FB
VCA
CLIP
B CLIP
LIMIT
MUTE
PULSE ADD
FULL WAVE RECT
DL201
DRIVE
CCD
VOB
VID IN
CLK
COMP
OUT
VSS
VDD

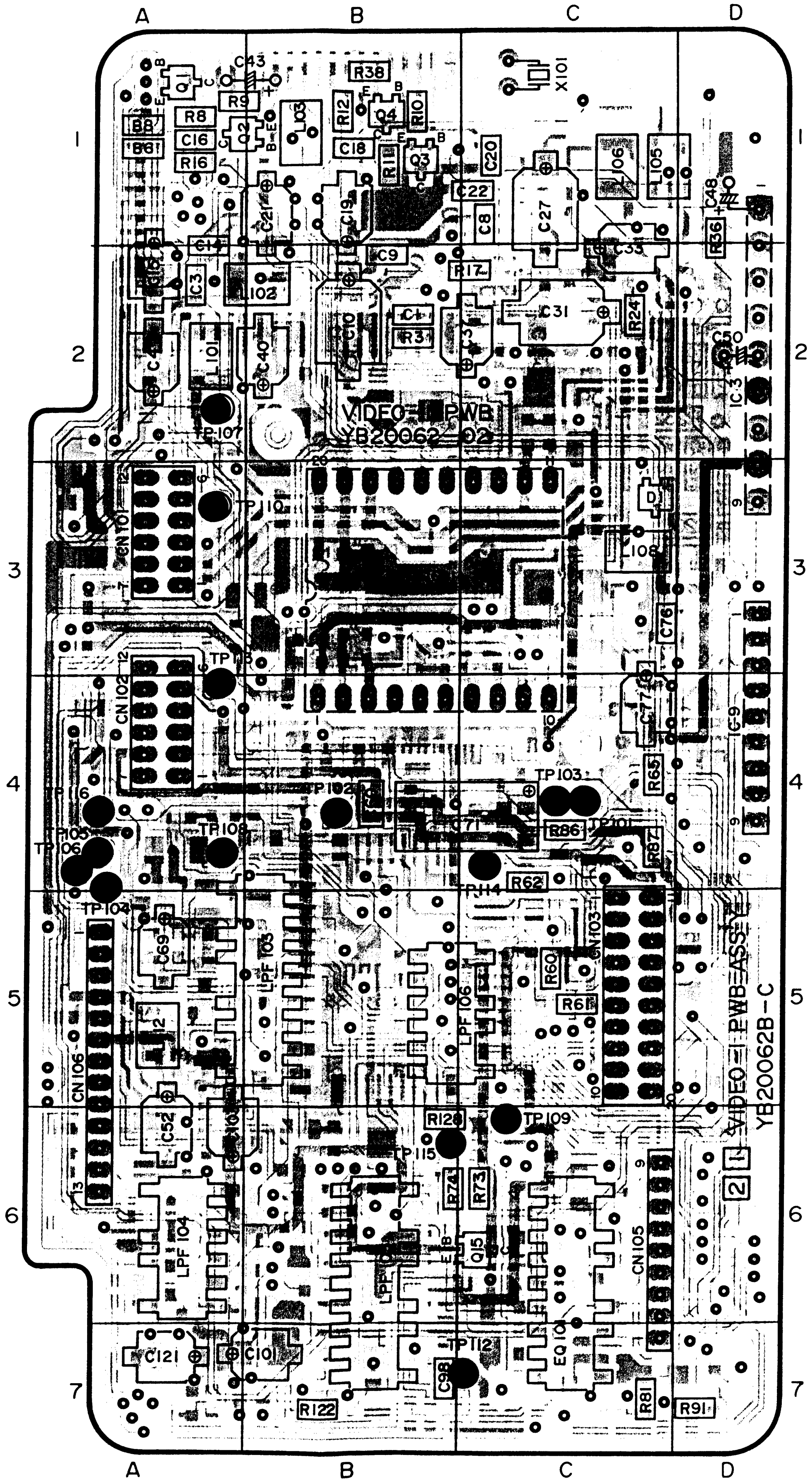
4.34 VIDEO-1 CIRCUIT BOARD

— Rear —



C5
CLOCK OSC
R31
OB LEVEL
R29
BLOOMING
R54
R LEVEL
R56
B LEVEL
R58
YL LEVEL
R66
YH SET UP
R67
YL SET UP
R68
R SET UP
R110
B SET UP
R52
R SEPA
R49
B SEPA
R41
AGC
R147
YH GAIN
R144
B-Y GAIN
R199
V EDGE 2H
R83
YH BALANCE
R123
V EDGE 1H
A
B
C
D
1
2
3
4
5
6
7
VIDEO-1 PWB ASSY
YB20062-02

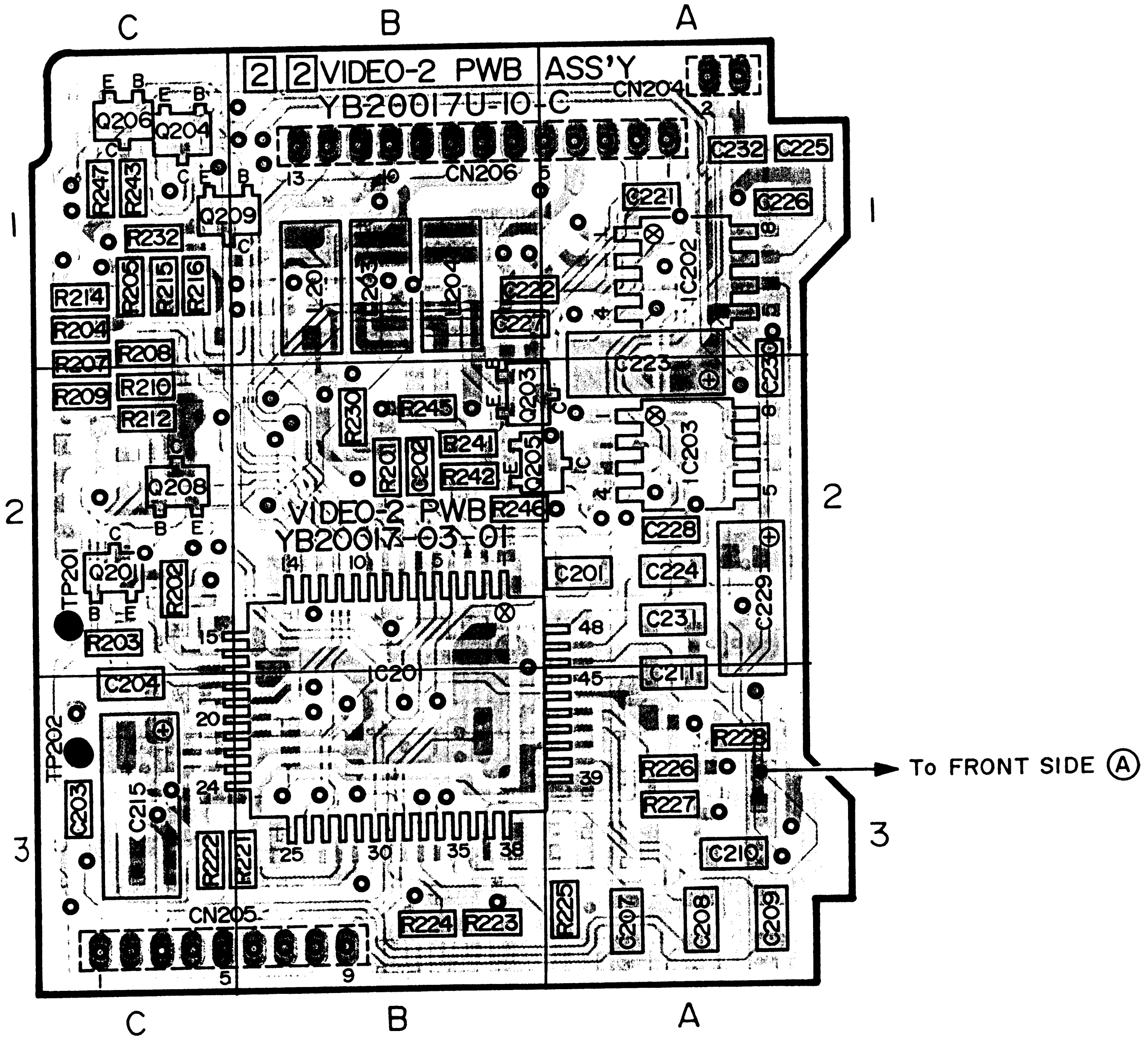
— Front —



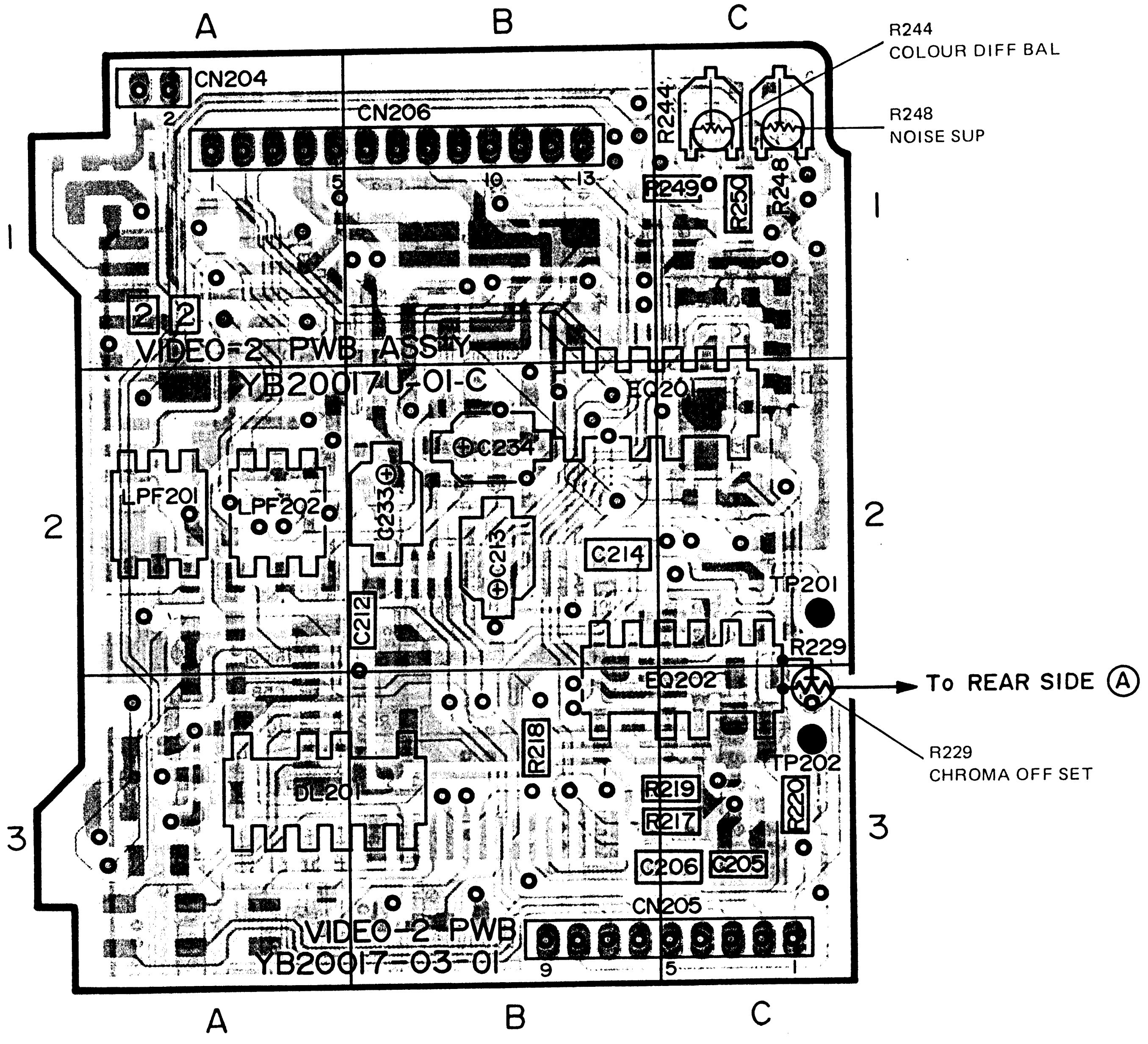
A
B
C
D
1
2
3
4
5
6
7
VIDEO-1 PWB
YB20062-02
VIDEO-1 PWB ASSY
YB20062B-C

4.35 VIDEO-2 CIRCUIT BOARD

– Rear –

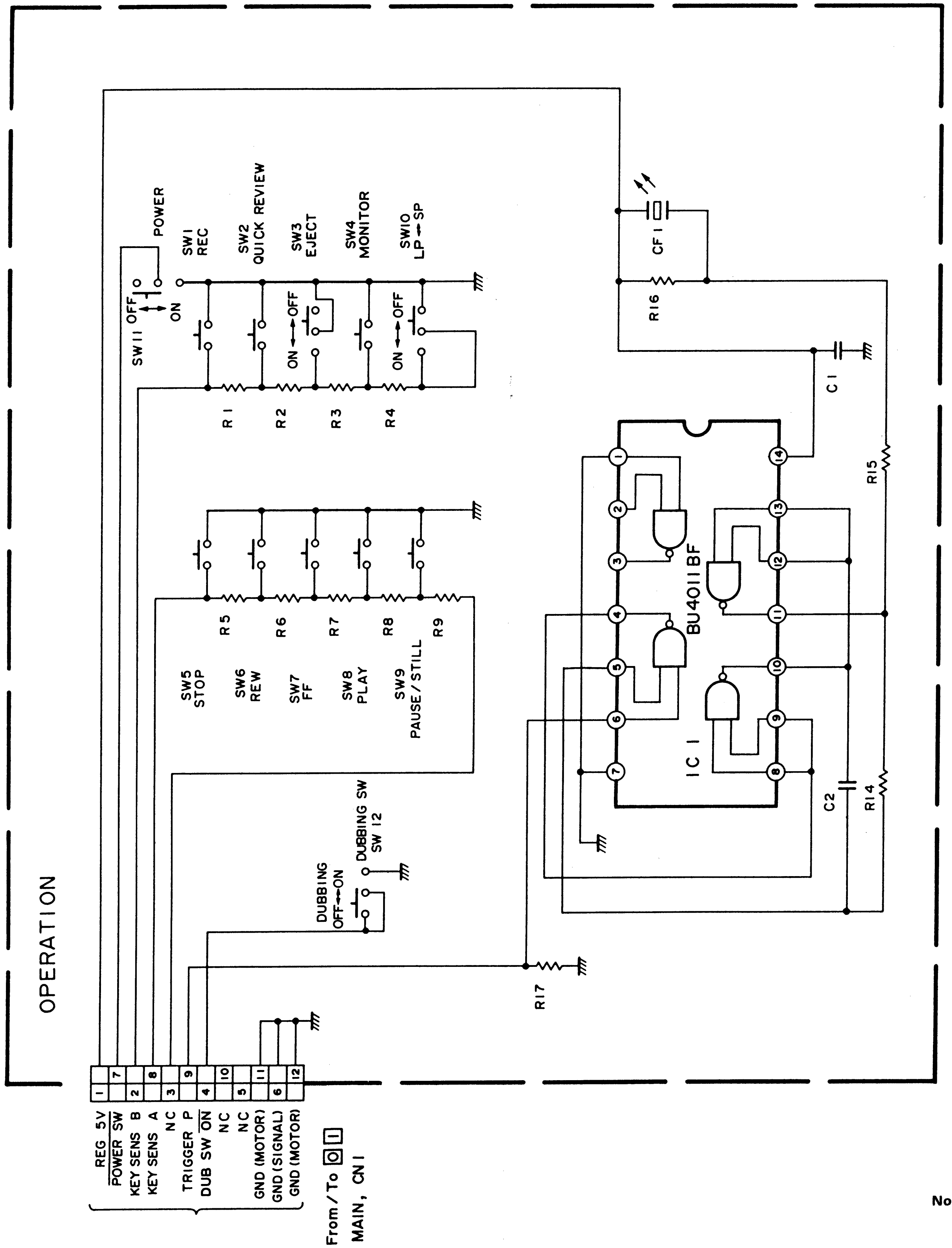

C
B
A
1
2
3
2 VIDEO-2 PWB ASS'Y
YB20017U-10-C
CN204
CN206
Q206
Q204
Q209
R247
R243
R232
R214
R206
R215
R216
R204
R207
R208
R209
R210
R212
Q208
Q201
R202
R203
TP201
TP202
C204
C203
C215
R222
R221
CN205
R224
R223
R225
C207
C208
C209
C210
R227
R226
R228
C211
C231
C224
C228
C201
C229
C230
C223
C222
C227
C221
C226
C232
C225
IC202
IC203
IC201
Q203
Q205
R230
R245
R241
R242
R246
R201
C202
VIDEO-2 PWB
YB20017-03-01
To FRONT SIDE Ⓐ

– Front –


A
B
C
1
2
3
CN204
CN206
R244
R249
R250
R248
2 VIDEO-2 PWB ASS'Y
YB20017U-01-C
EQ201
C234
LPF201
LPF202
C233
C213
C214
TP201
C212
R229
EQ202
TP202
DL201
R218
R219
R217
R220
C206
C205
CN205
VIDEO-2 PWB
YB20017-03-01
To REAR SIDE Ⓐ
R244
COLOUR DIFF BAL
R248
NOISE SUP
R229
CHROMA OFF SET

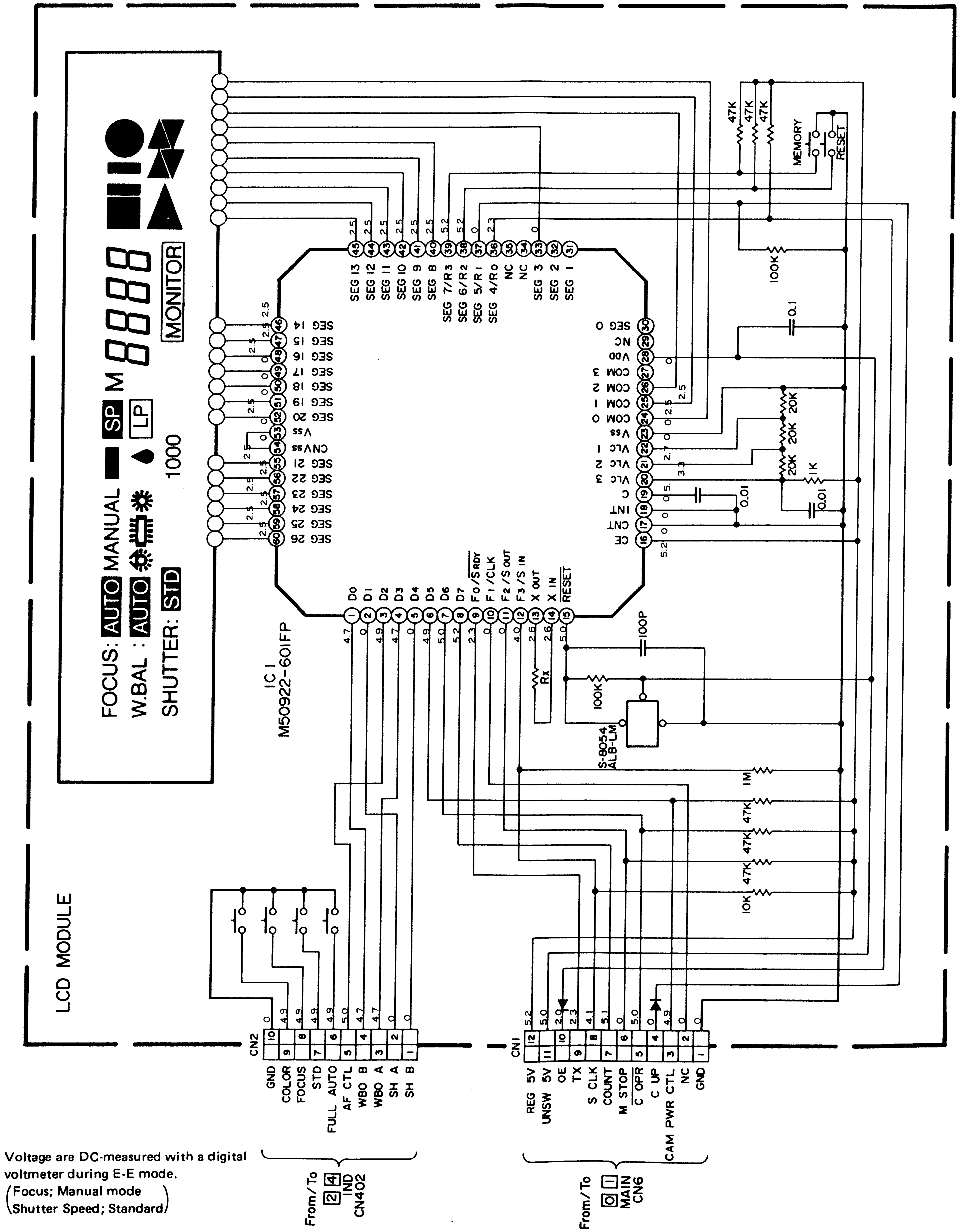
4.36 OPERATION SCHEMATIC DIAGRAM

Note:
This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


OPERATION
POWER
SW11 OFF ON
SW1 REC
SW2 QUICK REVIEW
SW3 EJECT
SW4 MONITOR
SW10 LP↔SP
ON↔OFF
R1
R2
R3
R4
R5
R6
R7
R8
R9
SW5 STOP
SW6 REW
SW7 FF
SW8 PLAY
SW9 PAUSE/STILL
CF1
R16
C1
R15
R14
C2
R17
IC1
BU4011BF
DUBBING OFF↔ON
DUBBING SW SW12
REG 5V
POWER SW
KEY SENS B
KEY SENS A
NC
TRIGGER P
DUB SW ON
NC
NC
GND (MOTOR)
GND (SIGNAL)
GND (MOTOR)
From/To 0 1 MAIN, CN1

4.37 LCD MODULE SCHEMATIC DIAGRAM

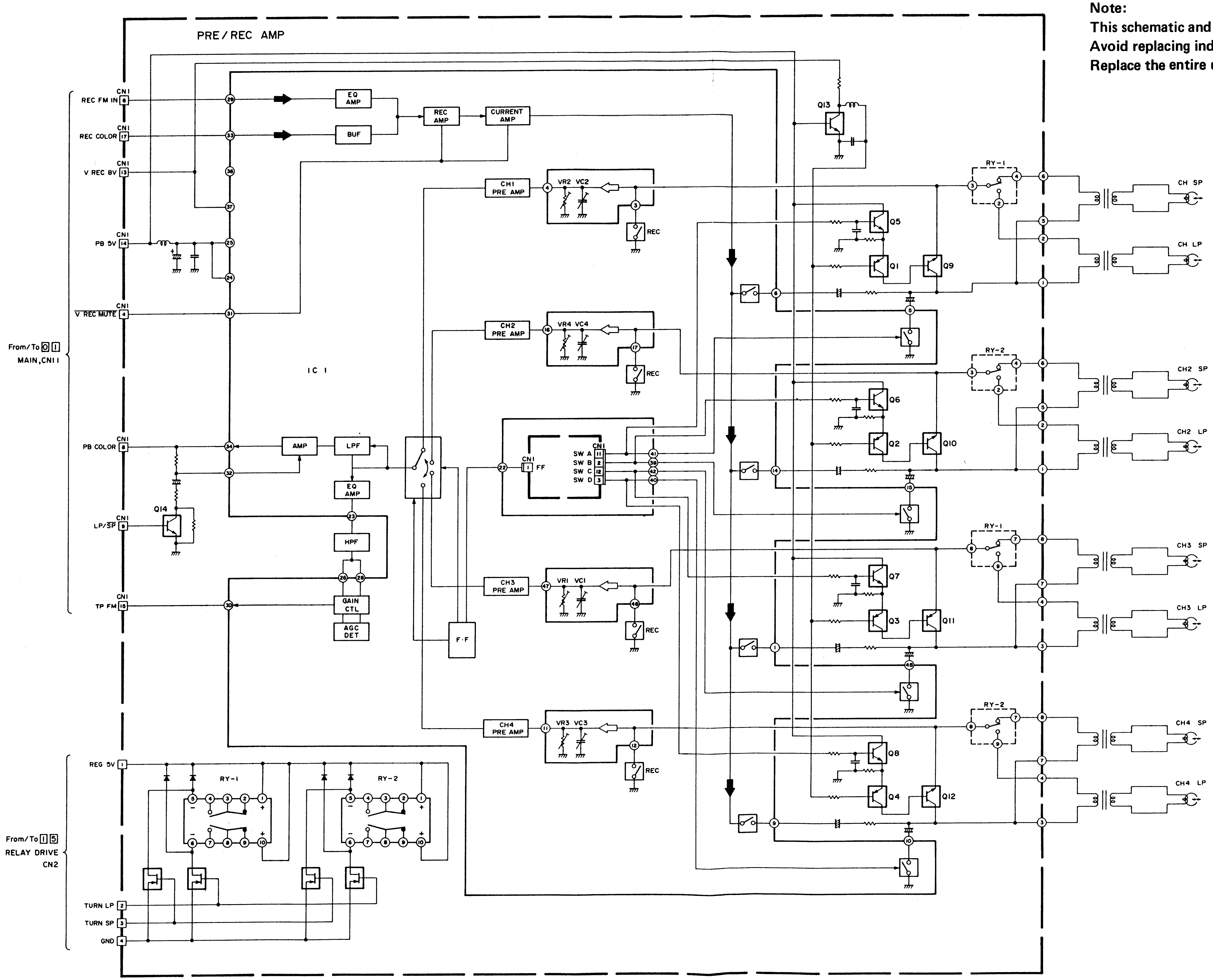
Note:
This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


LCD MODULE
FOCUS: AUTO MANUAL
W.BAL: AUTO
SHUTTER: STD
SP
LP
M
MONITOR
1000
IC1 M50922-601FP
SEG 13
SEG 12
SEG 11
SEG 10
SEG 9
SEG 8
SEG 7/R3
SEG 6/R2
SEG 5/R1
SEG 4/Ro
NC
NC
SEG 3
SEG 2
SEG 1
SEG 0
NC
VDD
COM 3
COM 2
COM 1
COM 0
VSS
VLC 1
VLC 2
VLC 3
C
INT
CNT
CE
SEG 14
SEG 15
SEG 16
SEG 17
SEG 18
SEG 19
SEG 20
VSS
CNVSS
SEG 21
SEG 22
SEG 23
SEG 24
SEG 25
SEG 26
D0
D1
D2
D3
D4
D5
D6
D7
F0/S RDY
F1/CLK
F2/S OUT
F3/S IN
X OUT
X IN
RESET
47K
MEMORY
RESET
100K
0.1
20K
1K
0.01
100P
Rx
S-8054 ALB-LM
1M
10K
CN2
GND
COLOR
FOCUS
STD
FULL AUTO
AF CTL
WBO B
WBO A
SH A
SH B
From/To 2 4 IND CN402
CN1
REG 5V
UNSW 5V
OE
TX
S CLK
COUNT
M STOP
C OPR
C UP
CAM PWR CTL
NC
GND
From/To 0 1 MAIN CN6

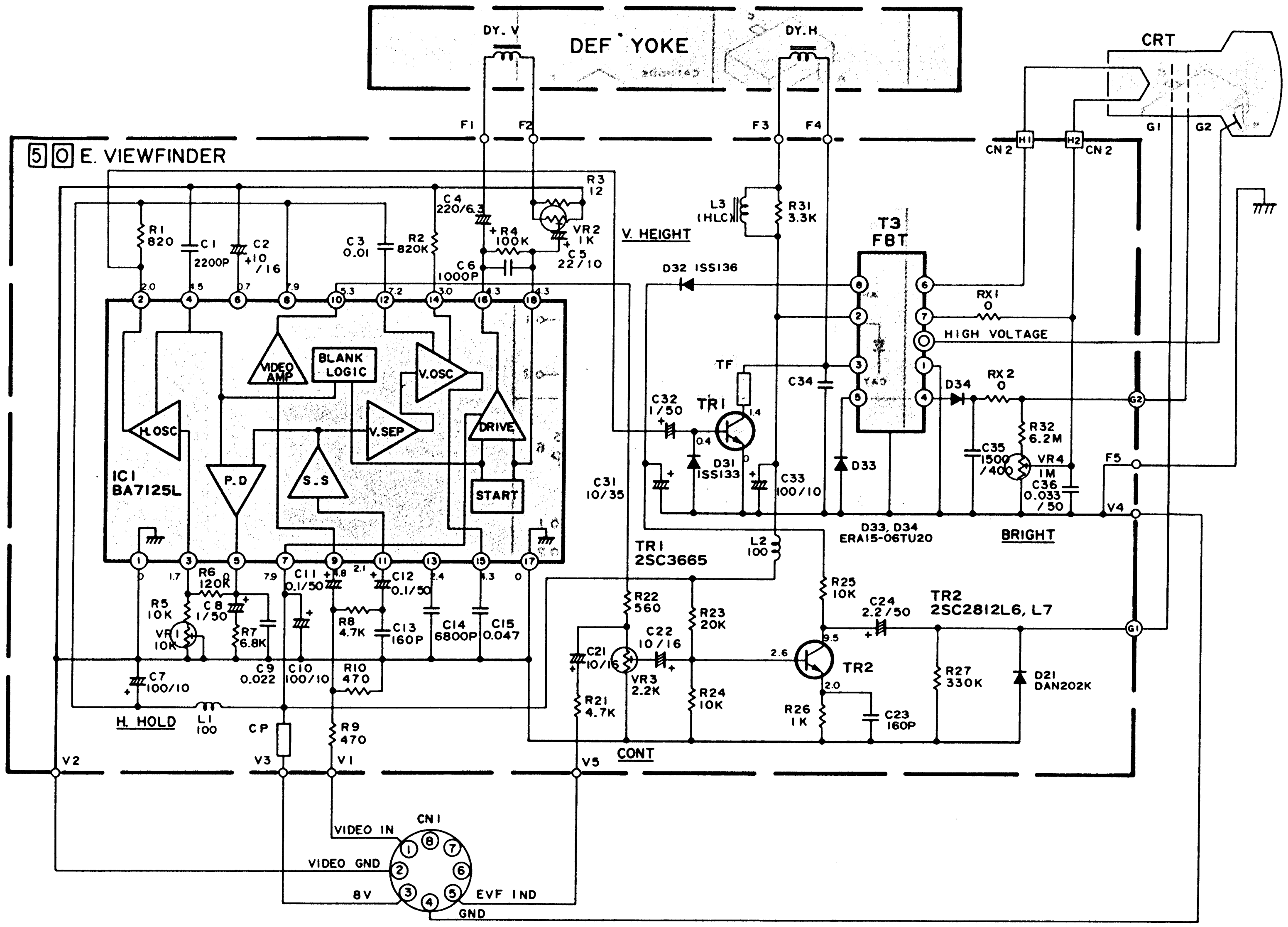
Note: Voltage are DC-measured with a digital voltmeter during E-E mode.
(Focus; Manual mode
Shutter Speed; Standard)

4.38 PRE/REC AMP SCHEMATIC AND BLOCK DIAGRAM

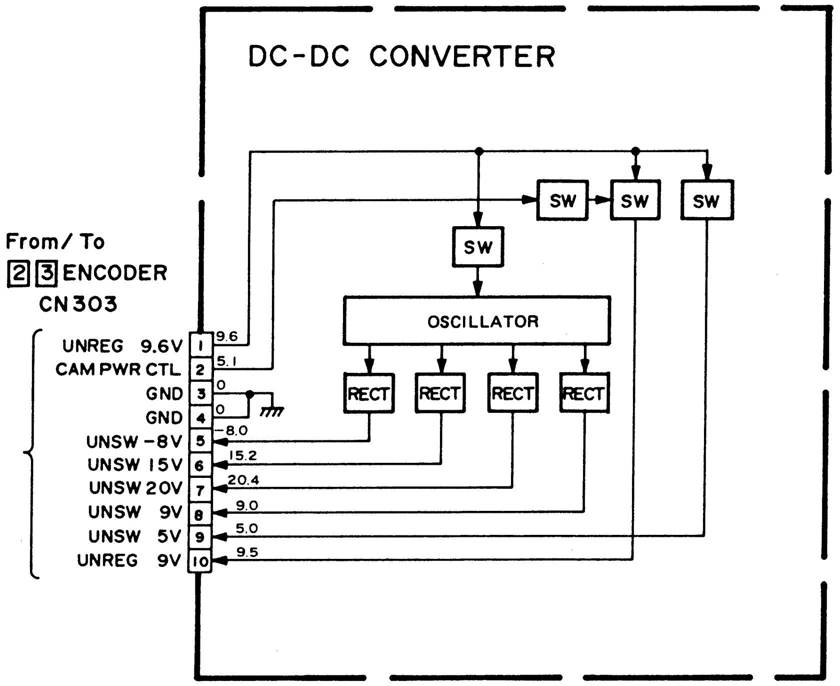
Note:
This schematic and block diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


PRE / REC AMP
From/To 01
MAIN,CN11
CN1
REC FM IN 6
REC COLOR 17
V REC 8V 13
PB 5V 14
V REC MUTE 4
PB COLOR 8
LP/SP 9
Q14
TP FM 15
IC 1
EQ AMP
BUF
REC AMP
CURRENT AMP
Q13
CH1 PRE AMP
VR2 VC2
REC
CH2 PRE AMP
VR4 VC4
AMP
LPF
EQ AMP
HPF
GAIN CTL
AGC DET
FF
SW A
SW B
SW C
SW D
F·F
CH3 PRE AMP
VR1 VC1
CH4 PRE AMP
VR3 VC3
RY-1
RY-2
Q5
Q1
Q9
Q6
Q2
Q10
Q7
Q3
Q11
Q8
Q4
Q12
CH SP
CH LP
CH2 SP
CH2 LP
CH3 SP
CH3 LP
CH4 SP
CH4 LP
From/To 15
RELAY DRIVE
CN2
REG 5V 1
TURN LP 2
TURN SP 3
GND 4

4.39 ELECTRONIC VIEWFINDER SCHEMATIC DIAGRAM


DEF YOKE
DY.V
DY.H
CRT
F1
F2
F3
F4
G1
G2
CN2
H1
H2
50 E. VIEWFINDER
R1 820
C1 2200P
C2 +10 /16
C3 0.01
R2 820K
C4 220/6.3
R4 100K
VR2 1K
R3 12
C5 22/10
C6 1000P
V. HEIGHT
L3 (HLC)
R31 3.3K
T3 FBT
D32 1SS136
RX1 0
HIGH VOLTAGE
VIDEO AMP
BLANK LOGIC
V.OSC
H.OSC
V.SEP
DRIVE
P.D
S.S
START
IC1 BA7125L
TF
TR1
C32 1/50
C34
D34
RX2 0
R32 6.2M
C35 1500 /400
VR4 1M
C36 0.033 /50
D31 1SS133
C33 100/10
D33
C31 10/35
F5
V4
D33, D34 ERA15-06TU20
BRIGHT
TR1 2SC3665
L2 100
R6 120K
C11 0.1/50
C12 0.1/50
R5 10K
C8 1/50
VR1 10K
R7 6.8K
R8 4.7K
C13 160P
C14 6800P
C15 0.047
C7 100/10
C9 0.022
C10 100/10
R10 470
R22 560
R23 20K
C21 10/16
C22 10/16
VR3 2.2K
R21 4.7K
R24 10K
R25 10K
C24 2.2/50
TR2 2SC2812L6, L7
TR2
R26 1K
C23 160P
R27 330K
D21 DAN202K
H. HOLD
L1 100
CP
R9 470
V2
V3
V1
V5
CONT
CN1
VIDEO IN
VIDEO GND
8V
EVF IND
GND

4.40 DC-DC CONVERTER BLOCK DIAGRAM


DC-DC CONVERTER
SW
SW
SW
SW
OSCILLATOR
RECT
RECT
RECT
RECT
From/ To
23 ENCODER
CN303
UNREG 9.6V 1 9.6
CAM PWR CTL 2 5.1
GND 3 0
GND 4 0
UNSW -8V 5 -8.0
UNSW 15V 6 15.2
UNSW 20V 7 20.4
UNSW 9V 8 9.0
UNSW 5V 9 5.0
UNREG 9V 10 9.5

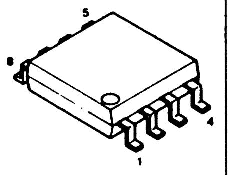
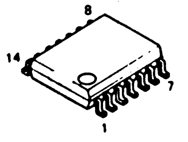
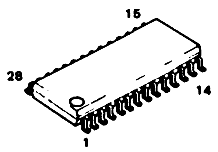
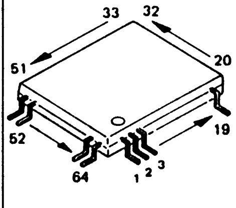
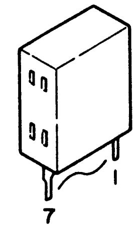
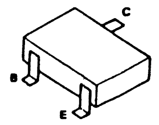
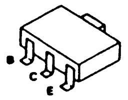
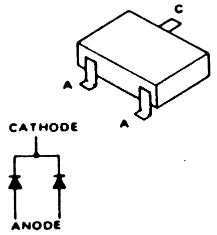
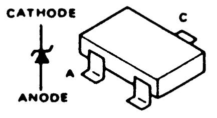
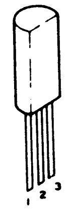
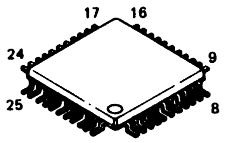
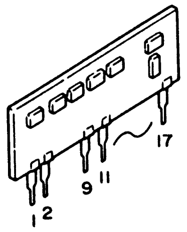
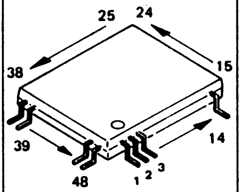
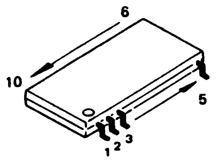
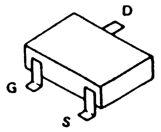
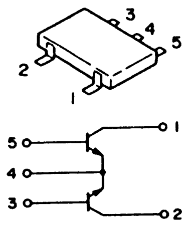
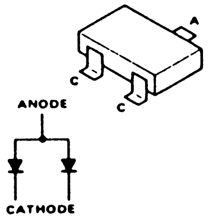
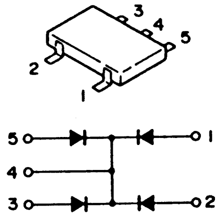
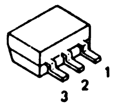
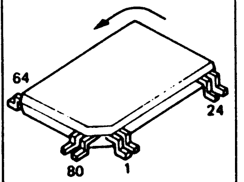
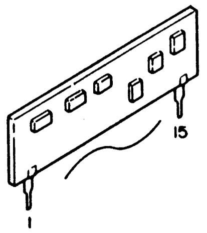
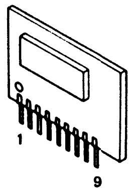
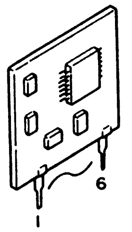
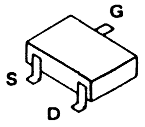
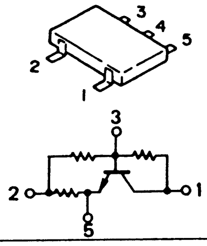
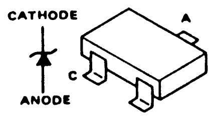
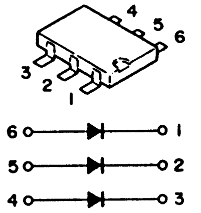
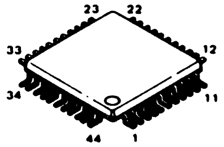
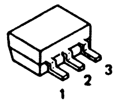
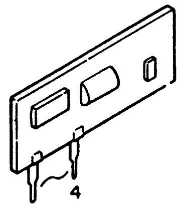
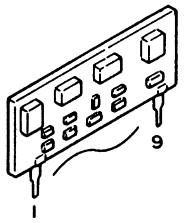
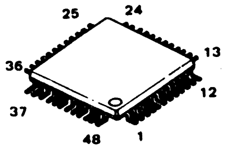
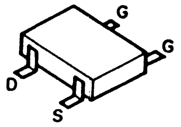
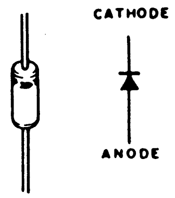
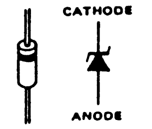
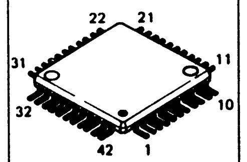
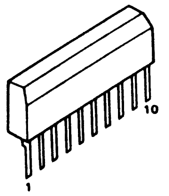
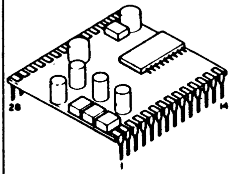
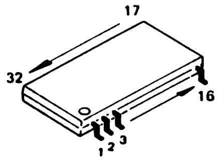
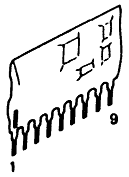
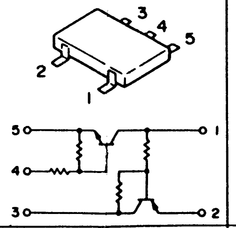
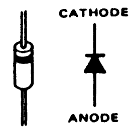
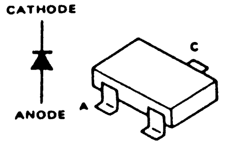
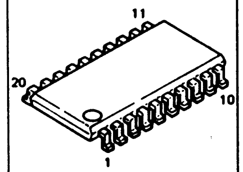
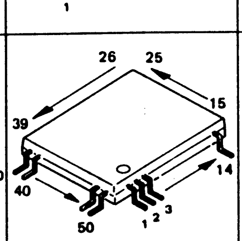
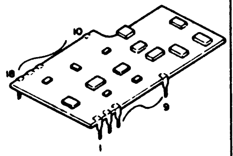
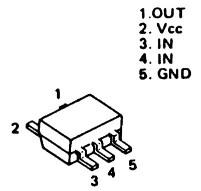
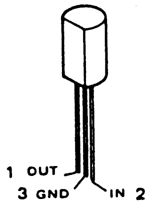
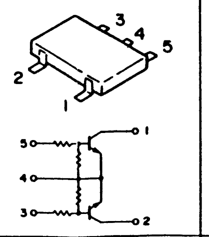
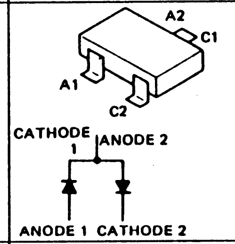
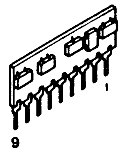
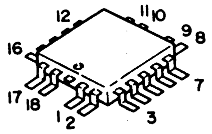
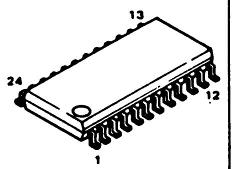
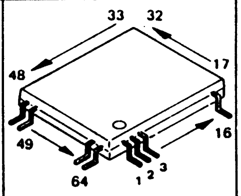
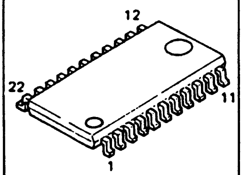
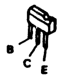
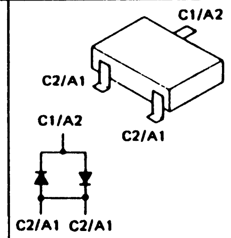
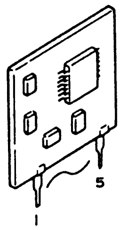
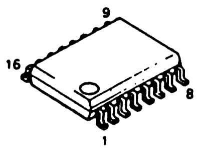
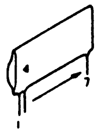
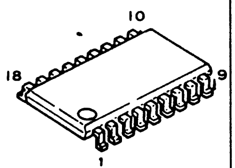
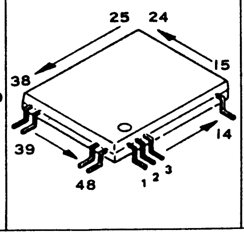
Note:
This block diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

4.41 SEMICONDUCTOR SHAPES

	NAME	L
	IC	
A	AFZ74A001X1	7A
	AFZ74A002X1	7A
	AN2275S	5D
	AN3212S	1C
	AN3323S	1C
	AN3592S	7E
	AN6308S	1A
	AN8009	6E
B	BA10324F	1B
	BA226F	1A
	BA6452F	7C
	BA6993F	1A
	BA7023F	8D
	BA7131F	1A
	BA7258AK	4A
	BA7600K	4A
	BA7757K	2B
	BU3767K	1B
	BU4011BF	1B
	BU4013BF	1B
	BU4030BF	1B
	BU4584BF	1B
C	CP1088G	1D
H	HD6305Z0F-CV06	3B
	H8D1927A	5E
	H8D7046	4C
	H8D7047	3C
	H8D7048	2C
	H8D7051A	8A
I	IR3702N1	1B
M	MC8089A	3D
	MC8180B	1E
	MC8181D	1E
	MC8182B	1E
	MN3106S	1A
	MSM6830	6A
	MSM6831	6A
	MSM6855	6A
	MSM6846MS	1A
	MSM6984MS	1A
	MSM6985-2MS	1A
	MSM6989MS	1A
	M51282FP	8E
	M51646FP	1C
	M51648FP	6B
	M51799FP	5A
	M5236ML	3A
	M52410FP	6A
	M5282FP	1A
	M54543ASL-A	5B
	M54641FP	2E
N	NJM2904E	1A
S	S-81250AG	2A
	S8054HN	4B

	NAME	L
T	TA7374P	8C
	TC4S69F	6D
	TC4S71F	6D
	THE175A	4D
	THE191A	5C
	THE225	4D
	TME234	6C
	THE257A	8A
U	UPC2370GH	2D
	UPC2371GH	2D
	UPC324G2	1B
	UPD4538BG	8B
V	VC2031MP	7B
	VC2038	4E
	VC2039	7D
	VC2041	7C
	VC2043	7D
	VC2044	7D
	VC2060	7D
	VC5026G	6A
	6VT07	3E
	6VT08	3E
	TRANSISTOR	
D	DTA124EU	1F
	DTC124EU	1F
	DTC144EK	1F
	DTC144ES	7F
	DTC144EU	1F
	DTC144WK	1F
	DTC144WU	1F
F	FMC2	5F
	FMG1	6F
	FMG2	6F
	FMU1	3G
	FMW1	2G
	FMW3	2G
2SA	2SA1036K	1F
	2SA1532	1F
	2SA1576	1F
	2SA1610	1F
	2SA1611	1F
	2SA881R	7F
2SB	2SB1009	7F
	2SB1218	1F
	2SB624	1F
	2SB798	1G
2SC	2SC2412K	1F
	2SC3931	1F
	2SC3936	1F
	2SC4081	1F
	2SC4098	1F
	2SC4099	1F
	2SC4176	1F
	2SC4177	1F
	2SC4178	1F

	NAME	L
2SD	2SD1819	1F
2SJ	2SJ146	2F
2SK	2SK198	3F
	2SK620	2F
	2SK665	2F
3SK	3SK179	4F
	DIODE	
D	DAN202U	1H
	DAP202U	2H
	DA204U	6H
E	ERA81-004	4H
F	FMN1	2I
I	IMN10	3I
M	MA141K	5I
	MA141WA	2H
	MA141WK	1H
	MA143	6H
	MA184	5H
	MA185	5H
	MA3075H	1I
	MA704	5H
	MA716	7H
R	RD5.6EB2	4I
	RD6.8EB2	4I
	RD7.5M	1I
	RD7.5MB3	1I
	RD7.5M-T2B2	1I
	RD8.2EB2	4I
	RD8.2EBS	4I
	RD8.2MB2	1I
	RD9.1ESB2	1I
	1SS133	5H
	1SS136	5H

	IC					TRANSISTOR		DIODE	
	A	B	C	D	E	F	G	H	I
1				 33 32 51 20 52 19 64 1 2 3				 C A A CATHODE ANODE	 CATHODE C A ANODE
2		 17 16 24 9 25 8 32 1		 25 24 38 15 39 14 48 1 2 3			 3 4 5 2 1 5 1 4 3 2	 A C C ANODE CATHODE	 3 4 5 2 1 5 1 4 3 2
3								 CATHODE A C ANODE	 4 5 6 3 2 1 6 1 5 2 4 3
4	 23 22 33 12 34 11 44 1				 25 24 36 13 37 12 48 1			 CATHODE ANODE	 CATHODE ANODE
5	 22 21 31 11 32 10 42 1					 3 4 5 2 1 5 1 4 3 2		 CATHODE ANODE	 CATHODE C ANODE A
6		 26 25 39 15 40 14 50 1 2 3		 1.OUT 2. Vcc 3. IN 4. IN 5. GND 1 2 3 4 5	 1 OUT 3 GND IN 2	 3 4 5 2 1 5 1 4 3 2		 A2 C1 A1 C2 CATHODE 1 ANODE 2 ANODE 1 CATHODE 2	
7		 12 11 10 9 8 16 7 17 18 1 2 3		 33 32 48 17 49 16 64 1 2 3				 C1/A2 C2/A1 C2/A1 C1/A2 C2/A1 C2/A1	
8					 25 24 38 15 39 14 48 1 2 3				

4-38

SECTION 5
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

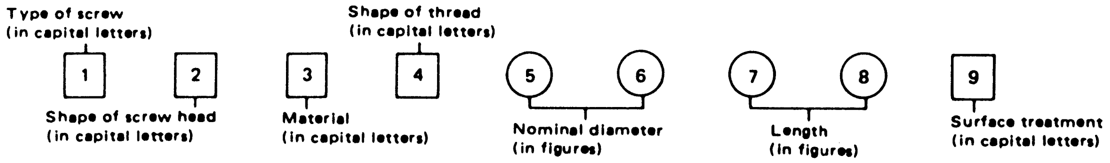
NOTE :

[M] indicates mechanical symbol number.

5.1 STANDARD PART NUMBER CODING

5.1.1 Screw coding

Standard screw part numbers are as follows.


Type of screw (in capital letters)
Shape of thread (in capital letters)
1
2
3
4
5
6
7
8
9
Shape of screw head (in capital letters)
Material (in capital letters)
Nominal diameter (in figures)
Length (in figures)
Surface treatment (in capital letters)

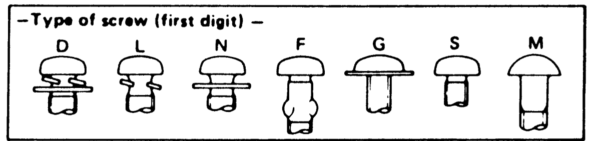
Type of screw (first digit)

S	Normal screws
D	Assembled machine screws (with plain and spring washers)
L	" (with spring washer)
N	" (with plain washer)
F	Feather screws
G	Washer head tapping screws
M	Wood screws

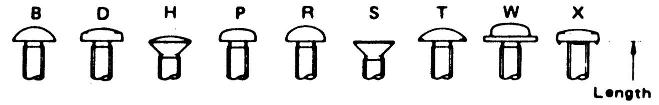
Shape of screw head (second digit)

B	Brazier head
D	Binding head
H	Oval countersunk head
P	Pan head
R	Round head
S	Flat head
T	Truss head
W	Washer head (machine screws)
X	Toothed head

–Type of screw (first digit) –



– Shape of screw head (second digit) –


B
D
H
P
R
S
T
W
X
Length

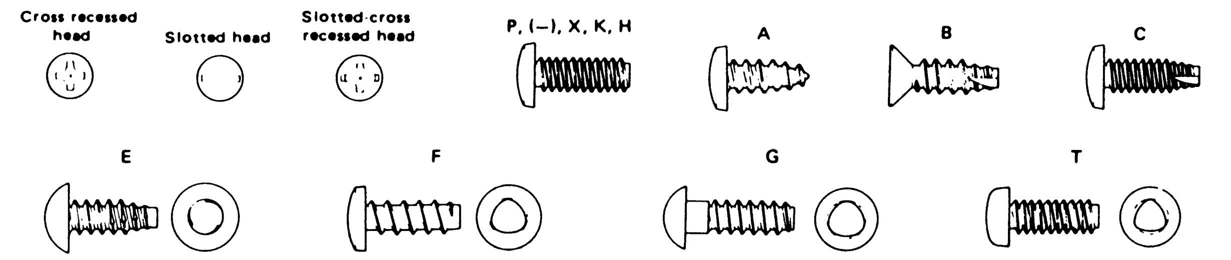
Material (third digit)

S	Steel
E	Stainless steel
C	Cast iron
U	Copper
B	Brass
P	Phosphor bronze
N	Nickel silver
Y	Cast brass
A	Aluminum
Z	Zinc alloy
K	Polycarbonate

Shape of thread (fourth digit)

P	Cross recessed head screws
(–)	Slotted head machine screws
X	Slotted-cross recessed head machine screws
K	Cross recessed head machine screws for precision equipment (type 1)
H	" (type 3)
A	Cross recessed head tapping screws (type 1)
B	" (type 2)
C	" (type 3)
E	Cross recessed head special tapping screws (brand : evertight)
F	" (brand : P-tight)
T	" (brand : taptight)
G	"

– Shape of thread (fourth digit) –


Cross recessed head
Slotted head
Slotted-cross recessed head
P, (–), X, K, H
A
B
C
E
F
G
T

Nominal diameter (fifth and sixth digits)

The fifth and sixth digits indicate a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

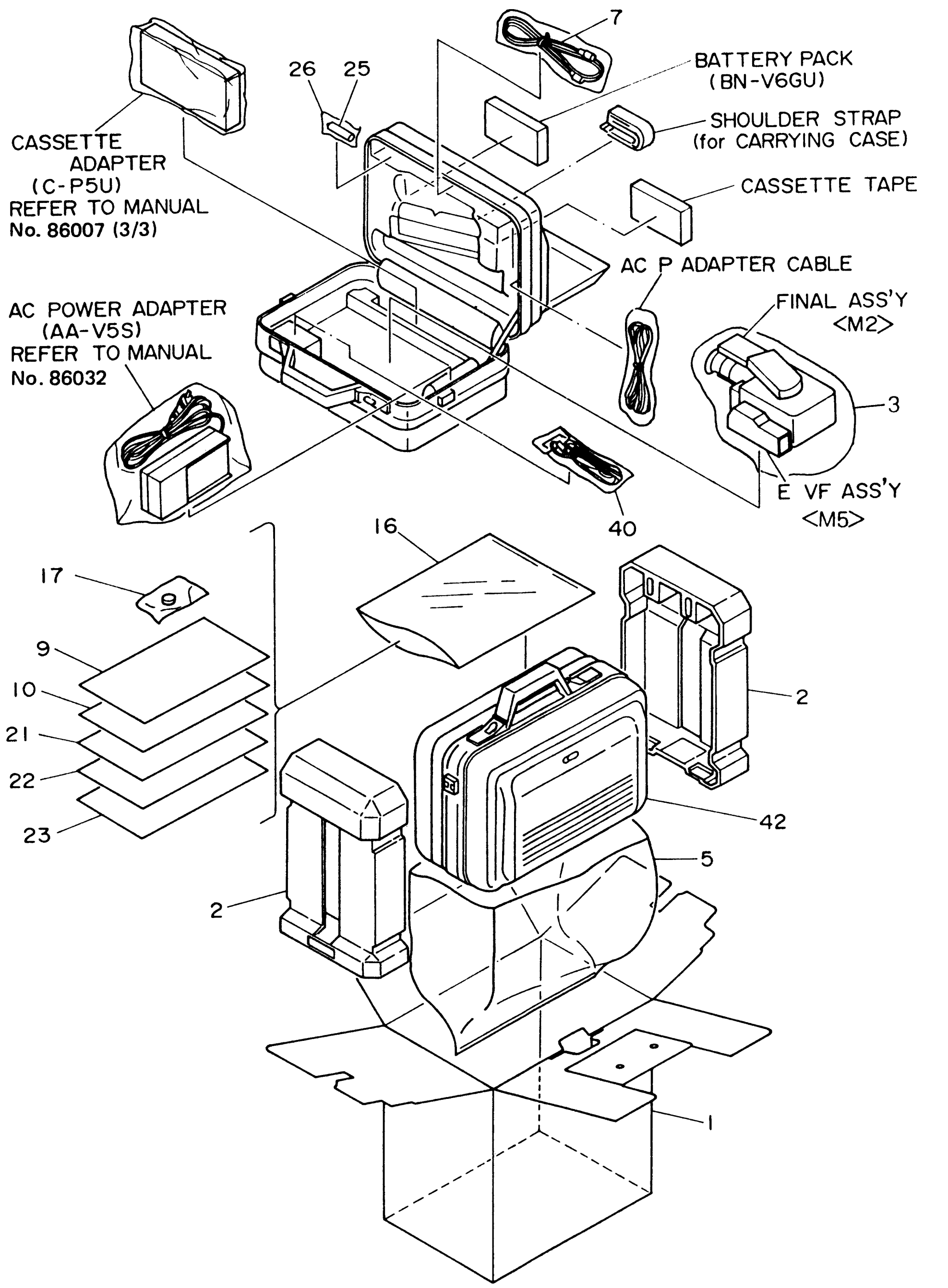
Length (seventh and eighth digits)

The seventh and eighth digits indicate length in millimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

Surface treatment (ninth digit)

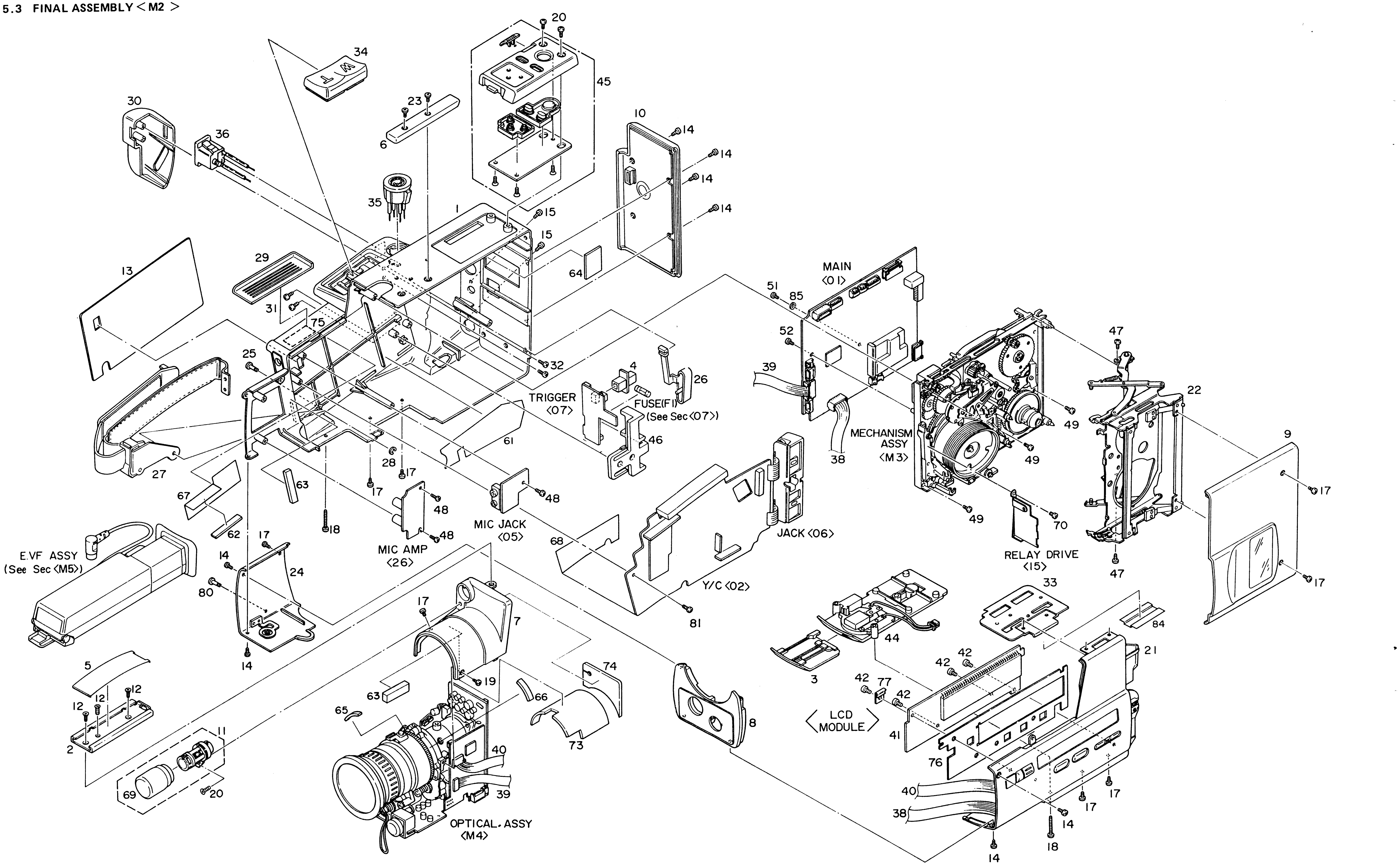
Z	Dichromate treatment after galvanizing (MFZn II-C)
N	Nickel plating (MFNi II, MFNi I)
R	Chromium plating (MBCr II, MBCr I)
G	Silver plating (SP4)
B	Black coating after plating
F	Blackening of iron (FB)
M	Blackening after galvanizing
K	Pickling of brass (PF2)
P	Phosphate treatment
W	Uni-chrome plating
L	Coated with transparent paint
A	Colored red after galvanizing (MFZn II-C)
C	Colored blue after galvanizing (MFZn II-C)
T	Colored green after galvanizing (MFZn II-C)
V	Colored purple after galvanizing (MFZn II-C)

5.2 PACKING ASSEMBLY < M1 >


7
26
25
BATTERY PACK (BN-V6GU)
CASSETTE ADAPTER (C-P5U) REFER TO MANUAL No. 86007 (3/3)
SHOULDER STRAP (for CARRYING CASE)
CASSETTE TAPE
AC P ADAPTER CABLE
AC POWER ADAPTER (AA-V5S) REFER TO MANUAL No. 86032
FINAL ASS'Y <M2>
3
E VF ASS'Y <M5>
40
16
17
9
10
21
22
23
2
42
5
2
1

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			1. PACKING ASSEMBLY <M1>
	1	YQ30149-3	PACKING CASE
	2	YQ30150A	CUSHION ASSY
	3	YQM30021-2	POLY BAG
	5	QPGA050-04505	POLY BAG
	7	YU40408	AV CABLE
⚠	9	YU30052-27	INSTRUCTIONS
	10	BT-20063B	GUARANTY CARD
	16	QPGA025-03505	POLY BAG
⚠	17	YU40547	BATT.
	21	YU30052-35	CAUTION SHEET
	22	BT-20066	E.DISTRI.LIST
	23	TCN-3379	TAPE CATALOGUE
	25	UM-3DJ	BATTERY
	26	PQM30021-48	POLY BAG
⚠	40	YQ10051A	SHOULDER STRAP
⚠	42	YQ10043C	CARRING CASE

5.3 FINAL ASSEMBLY < M2 >



20
34
45
30
23
36
6
10
14
14
14
14
35
1
15
15
13
29
64
31
75
MAIN
<O1>
51
85
52
47
25
32
4
26
39
22
TRIGGER
<07>
FUSE(F1)
(See Sec<07>)
49
61
46
MECHANISM
ASSY
<M3>
49
9
27
28
17
38
63
17
48
17
67
18
MIC JACK
<05>
48
49
70
62
48
17
MIC AMP
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68
JACK <06>
RELAY DRIVE
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E.VF ASSY
(See Sec <M5>)
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LCD
MODULE
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OPTICAL. ASSY
<M4>
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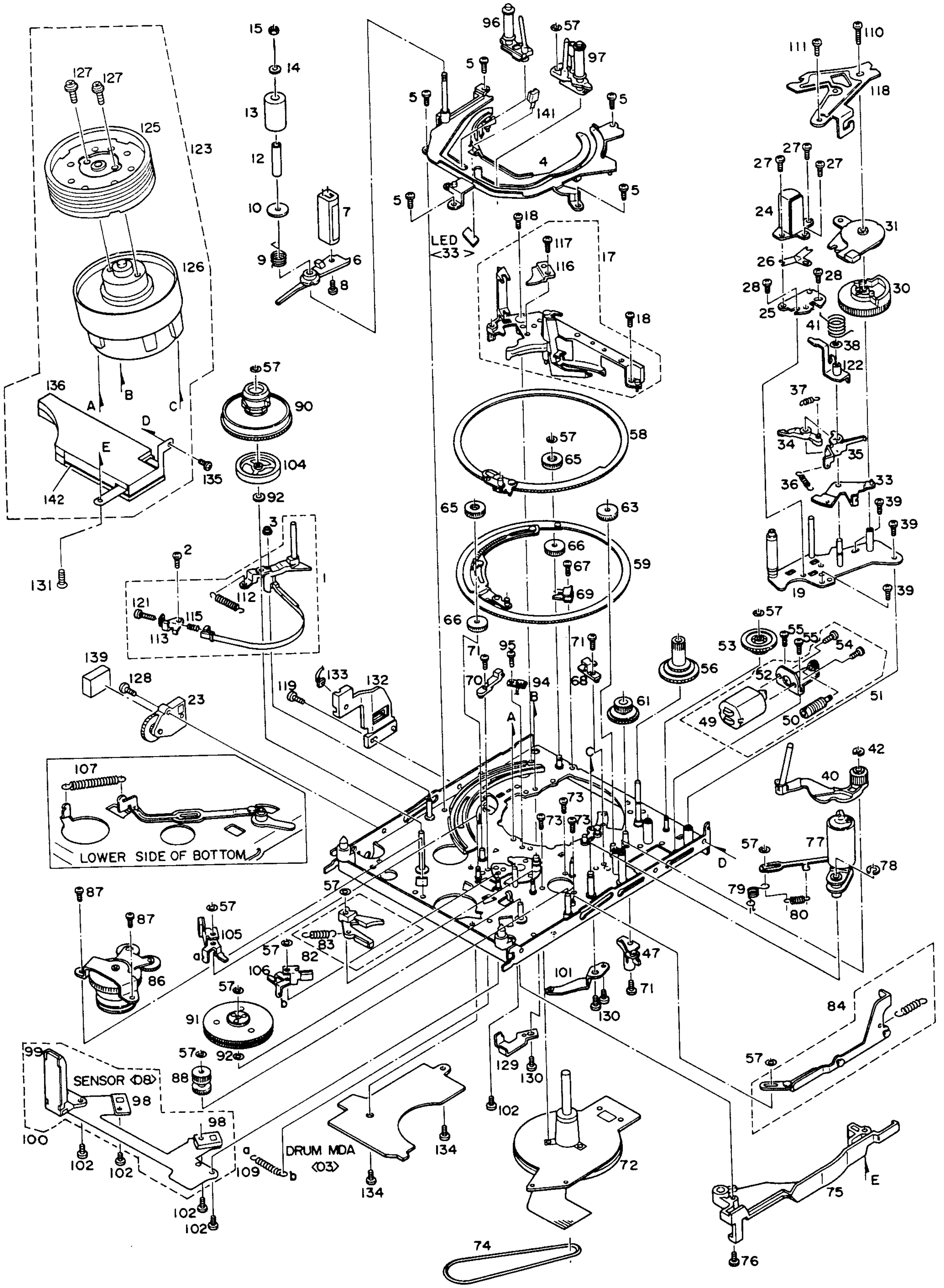
2. FINAL ASSEMBLY <M2>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	1	YQ10037X-30	LOWER CASE ASSY,INCL.24-32,75
	2	YQ40419-1-2	SHOE
⚠	3	YQ30092-15	B.U.BATT.COVER
	4	YQ40418-2	ALARM KNOB
	5	YQ40420-1-2	SHOE SPRING
	6	YQ40421-1-1	DECO PLATE
⚠	7	YQ30158A-2	FRONT COVER ASSY,INCL.73,74
⚠	8	YQ30064-4	FRONT PANEL
⚠	9	YQ30159R	CASS.COVER ASSY
	10	YQ20073-16-18	OPERATION UNIT
	11	YU40196-4	MICROPHONE ASSY,INCL.69
	12	SSSP2005D	SCREW,X3
⚠	13	YU20027-8-4	BATTERY BASE SHEET
	14	YQM30032-2-2	SPECIAL SCREW,X8
	15	YQM30032-6-2	SPECIAL SCREW,X2
	17	YQM30032-1-2	SPECIAL SCREW,X8
	18	YQM30032-23	SPECIAL SCREW,X2
	19	YQM30032-9	SPECIAL SCREW
	20	YQM30032-4-2	SPECIAL SCREW,X3
⚠	21	YQ10038T	UPPER CASE ASSY
	22	YQ20068B-5	CASS.HOUSING ASSY
	23	YQM30032-16-2	SPECIAL SCREW,X2
⚠	24	YQ20062-19-17	SIDE PANEL
	25	YQ40413	STUD
	26	YQ30091-1-4	BUTTON(TRIGGER)
	27	YQ20064C-15	GRIP BELT ASSY
	28	REE2500	E.RING
	29	YQ30162	GRIP RUBER
	30	YQ30098-17-14	FINGER REST
	31	SSSP2006D	SCREW,X2
	32	SDSF2006Z	TAPPING SCREW,X2
	33	YQ40417	SHOE BRACKET
	34	YU40204-2	ZOOM SWITCH
	35	YS40011A	E.V.F.CONN.ASSY
	36	YS40004B	DC.JACK ASSY
	38	YU40210-2	FLAT WIRE3
		OR YU40330	FLAT WIRE3
		OR YU40333	FLAT WIRE3
	39	YU40211-3	FLAT WIRE4
		OR YU40334	FLAT WIRE4
		OR YU40331-2	FLAT WIRE4
	40	YU40212-3	FLAT WIRE5
		OR YU40332	FLAT WIRE5
		OR YU40335	FLAT WIRE5
	41	YU40242-6-3	LCD MODULE
	42	SDSF2005Z	TAPPING SCREW,X4
	44	YQ30099A-3	BASE ASSY
	45	YQ30059-16	DATE UNIT
	46	YQ30090-1-1	TRGER BOARD STTOPER
	47	SPSK1730M	SCREW,X2
	48	SDSF2006Z	TAPPING SCREW,X3
	49	SPSG2608Z	SCREW,X3
	51	SPSH1740Z	SCREW
	52	SPSG2004M	SCREW
	61	YQ40545	SHIELD SPACER 2
	62	YQM30029-8	SPACER
	63	YQM30029-7	SPACER,X2
	64	YQM30029-9	SPACER
	65	YQM30029-4	SPACER
	66	YQM30029-5	SPACER
	67	YQ40544	SHIELD SPACER 1
	68	YU40418	Y/C SHEET
	69	YU40196-001	WINDOW SCREEN
	70	SPSH1725M	SCREW
	73	YQ40527	SHIELD(1)
	74	YQ40528-1-2	SHIELD(2)
	75	YQ40546	SHIELD SPACER 3
	76	YQ30175-1-1	SHIELD PLATE
	77	YQ40569-1-1	EARTH CLIP
	80	YQ40703	CAP
	81	SPSG2005M	SCREW
	84	YQ40667	SCREW COVER
	85	YQ40679	T. WASHER

5.4 MECHANISM ASSEMBLY < M3 >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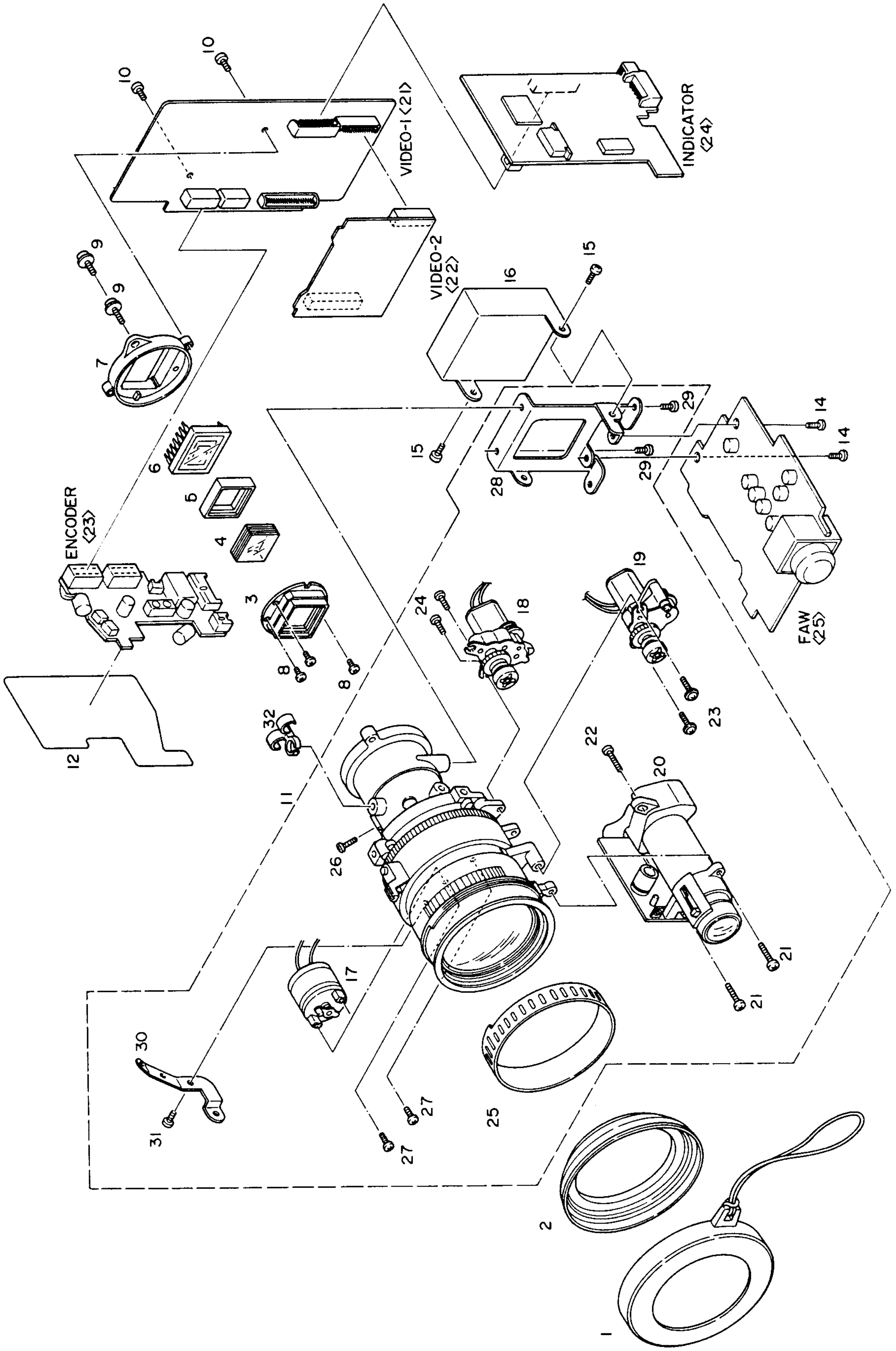
3. MECHANISM ASSEMBLY <M3>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YQ40389A-2	T.SERVO ASSY,INCL112-3,115,121
	2	SPSK1730M	SCREW
	3	YQ40059	CAP
	4	YQ40387B	G.RAIL ASSY
	5	SPSH1725M	SCREW,X5
	6	YQ20050-1-6	FE HEAD ARM
	7	YU40492	FULL ERASE HEAD
	8	SPSK1630M	SCREW
	9	YQ40391-1-2	TORSION SPRING
	10	YQ40063	FLANGE
	12	YQ40498-1-1	COLLAR
	13	YQ40497-1-2	IMPEDANCE ROLLER
	14	YQ40556	SPACER
	15	PQ42708	NUT
	17	YQ40066A-9	UV BASE ASSY,INCL.116,117
	18	SPSH1730M	MINI SCREW,X2
	19	YQ40343A-3	SUB DECK ASSY
	23	YU40001	DAMPER
	24	YU40232	AUDIO/CONTROL HEAD
	25	YQ40353	X PLATE
	26	YQ40354	HEAD SPRING
	27	SPSK1730M	SCREW,X3
	28	SPSK1720M	MINI SCREW,X2
	30	YQ20057-1-2	CAM GEAR
	31	YU40233	CAM ENCODER
	33	YQ40356A-2	ARM GEAR ASSY
	34	YQ40358	LOCK ARM 1
	35	YQ40359	LOCK ARM 2
	36	YQ40342	TENSION SPRING
	37	YQ40362	TENSION SPRING
	38	PQM30017-25	SLIT WASHER
	39	SPSH1725M	SCREW,X3
	40	YQ40364A-2	MIDDLE POLE ASSY
	41	YQ40361	TORSION SPRING
	42	PQM30017-23	SLIT WASHER
	47	YQ40553-1-1	LOADING GUIDE
⚠	49	YU40258G-2	LOADING MOTOR
	50	YQ40103A	WORM ASSY
	51	YQ40340A-4	L.M.BKT ASSY,INCL.49,50,52,54
	52	YQ40341A-2	LOADING MOTOR BKT ASSY
	53	YQ40108	WORM WHEEL
	54	SPSK1720M	MINI SCREW,X2
	55	SPSK1725M	SCREW,X2
	56	YQ30193	TERMINAL GEAR
	57	PQM30017-27	SLIP WASHER, X11
	58	YQ40232A-1	SUP LOADING RING ASSY
	59	YQ40115A-3	TU LOADING RING ASSY
	61	YQ40122-1-2	LOADING GEAR 1
	63	YQ40123	LOADING GEAR 2
	65	YQ40124	RING GUIDE GEAR(S),X2
	66	YQ40125	RING GUIDE GEAR(T),X2
	67	SPSK1725M	SCREW
	68	YQ40126	RING GUIDE 1
	69	YQ40127	RING GUIDE 2
	70	YQ40128	RING GUIDE 3
	71	SPSH1725M	SCREW,X3
⚠	72	YU40235V	CAPSTAN MOTOR ASSY
⚠		OR YU40235V-2	CAPSTAN MOTOR ASSY
	73	SPSH1725M	SCREW,X3
	74	YQM30003-3	BELT
	75	YQ30082-1-1	CAPSTAN MOTOR COVER
	76	SPSH1740M	SCREW
	77	YQ40366A-4	PINCH ROLLER ARM ASSY,INCL.80
	78	REE2500	"E" RING
	79	YQ40483-1-2	TORSION SPRING
	80	YQ40481	TENSION SPRING
	82	YQ40381A-2	SEARCH BRAKE ASSY,INCL.83
	83	YQ40383	TENSION SPRING
	84	YQ40384A-1	SEARCH BRAKE LEVER ASSY
	86	YU40007-2	CENTER PULLEY BRACKET ASSY
	87	SPSH1725M	SCREW,X2
	88	YQ40147-1-1	TAKE-UP GEAR
	90	YU40239-1-1	SUP R.DISC ASSY
	91	YU40240-1-1	TU CLUTCH ASSY
	92	Q03093-835	WASHER,X2
	94	YU40234	DEW SENSOR
	95	SPSH1725M	SCREW
	96	YQ40083C-7	SUP POLE BASE ASSY
	97	YQ40093D-13	TU POLE BASE ASSY
	98	YU40186	REEL SENSOR, X2
	99	YU40176	CASSETTE SWITCH
	100	YS40012E	SENSOR PWB ASSY, INCL. 98, 99
	101	YU40241	BRUSH
	102	SPSH1730M	MINI SCREW,X5
	104	YU40286	SUP B.REEL ASSY
	105	YQ40376A-2	MAIN BRAKE ASSY (SUPPLY)
	106	YQ40378A-2	MAIN BRAKE ASSY(TU)
	107	YQ40385-1-2	TENSION SPRING
	109	YQ40380	TENSION SPRING
	110	SPSH1780M	SCREW
	111	SPSH1725M	SCREW
	112	YQM30001-13-1	TENSION SPRING
	113	YQ40266	ADJUST PLATE
	115	YQM30002-1	COMPRESSION SPRING
	116	YQ40068-1-1	POLE BASE GUIDE
	117	SPSH1730M	MINI SCREW
	118	YQ30081-1-1	MIDDLE POLE STOPPER
	119	SPSH1740M	SCREW
	121	SPSK1780M	MINI SCREW
	122	YQ40352A-3	LOCK ARM 3 ASSY
⚠	123	YDV2006A	DRUM ASSY, INCL 125–127, 136, 142
	125	YDM2013B-3	UPPER DRUM ASSY
	126	YDM2015C	LOWER DRUM MOTOR ASSY
	127	PQ41535-4	SCREW
	128	SPSH1760M	SCREW
	129	YQ40256	SHIELD COVER
	130	SPSH1730M	MINI SCREW,X3
	131	PQ41450	SCREW
	132	YQ30113	E.SENS.BRACKET
	133	TPS605	PHOTO TRANSISTOR
	134	PQ41450-2	SCREW,X2
	135	SPSH1720M	SCREW
	136	TME282	PRE AMP
	139	YQ40520	DUMPER COVER
	141	SIM-20ST	LE DIODE
	142	KS244	PRE AMP CASE

5.5 OPTICAL BLOCK ASSEMBLY < M4 >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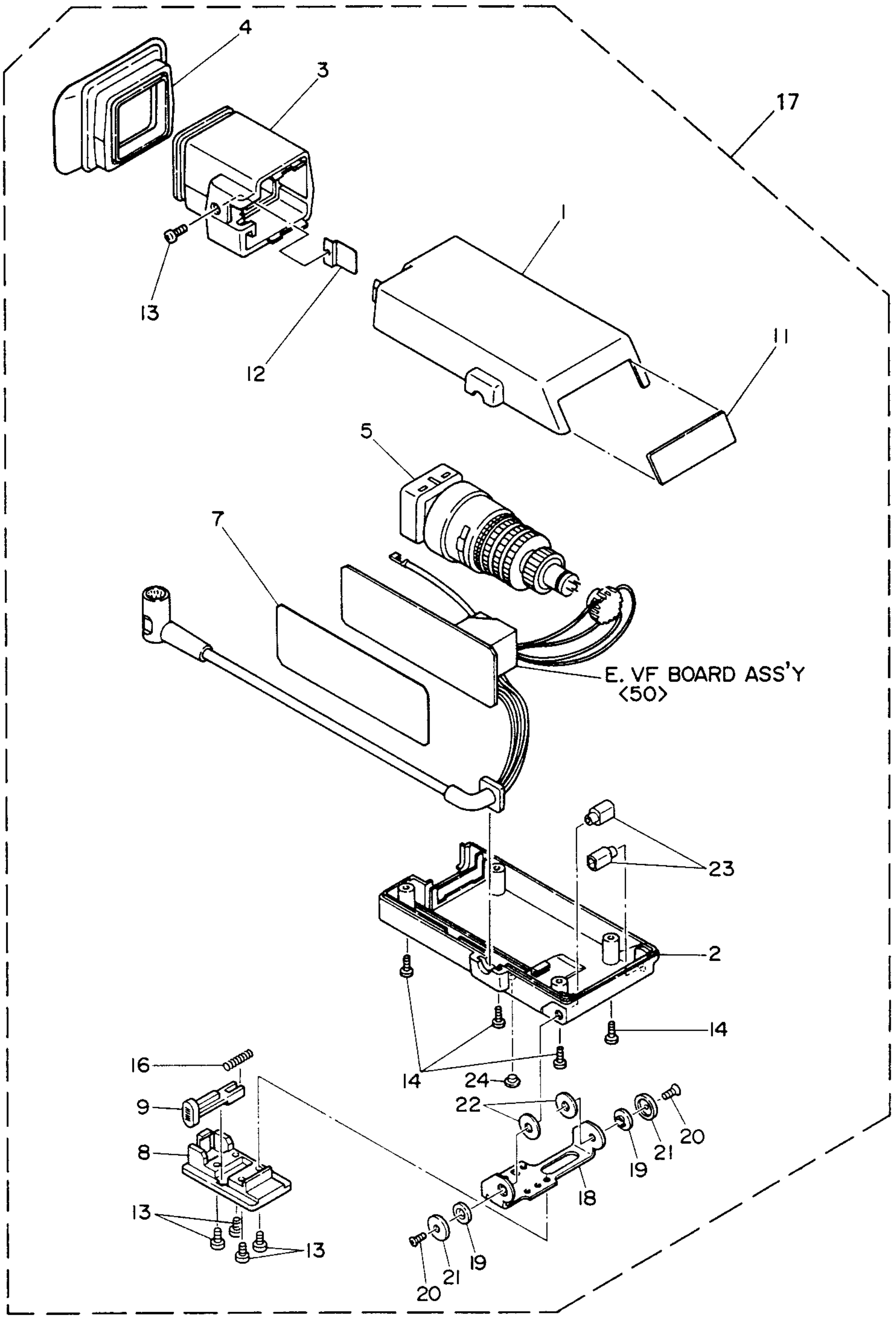
4. OPTICAL BLOCK ASSEMBLY <M4>

*⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YQ40437A-2	HOOD CAP ASSY
	2	YU40190	HOOD
	3	YQ30096	OPTICAL LPF HOLDER
	4	YU40319	OPTICAL LPF
	5	PQ42339	SPACER RUBBER
	6	LZ2121	IC(CCD)
	7	YQ30043	IMAGER HOLDER
	8	SPSK2004F	MINI SCREW,X3
	9	DPSP2008Z	SCREW,X2
	10	SPSP2004Z	SCREW,X2
⚠	11	YU40189-5	OPTICAL BLOCK ASSY, INCL 17 – 31
⚠		OR YU40189-2	OPTICAL BLOCK ASSY, INCL. 17 – 31
	12	YU30130-1-2	SHIELD PLATE
	14	SPSH1730Z	SCREW,X2
	15	SPSH1730Z	SCREW,X2
	16	YU40200-3	DC-DC CONVERTER
⚠	17	YU40189-001	IRIS MOTOR
	18	YU40189-002	ZOOM SENSOR
	19	YU40189-003	AUTO FOCUS MOTOR
	20	YU40189-004	LCD SENSOR
	21	YU40189-005	SCREW,X2
	22	YU40189-006	SCREW
	23	YU40189-007	SCREW,X2
	24	YU40189-008	SCREW,X2
	25	YU40189-009	RABBER
	26	YU40189-010	SCREW
	27	YU40189-011	SCREW,X2
	28	YQ40431	OP BRACKET
	29	SDSF2605Z	TAPPING SCREW,X2
	30	YQ40432-1-1	LENS BRACKET
	31	SDSF2605Z	TAPPING. SCREW
	32	YQ40690	CONDEN. HOLDER

5.6 ELECTRONIC VIEWFINDER ASSEMBLY < M5 >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*       5. ELECTRICAL VIEFINDER ASSEMBLY <M5>       *
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*⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	1	YU40356	TOP CASE
⚠	2	YU40357	BOTTOM CASE
	3	YU40374	LENS ASSY
	4	YU40384	EYE CAP
⚠	5	YU40349	CRT/DY ASSY
	7	YU40376	INSULATOR
	8	YU40360	SHOE
	9	YU40361-2	LEVER
	11	YQ30094-2	E-VF MARK
	12	YU40383	PLATE SPRING
	13	YU40363	SCREW(C),X5
	14	YU40373	SCREW(A),X4
	16	YU40362	SPRING
⚠	17	YU30045V-14	E.VIEWFINDER ASSY
	18	YU40359	ARM
	19	YU40364	SPACER, X2
	20	YU40476	SCREW(B),X2
	21	YQ40573	COVER,X2
	22	YU40365	BUSHING,X2
	23	YU40367	LEVER PIN,X2
	24	YU40542	CAP

SECTION 6
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS— All resistance values are in ohms (Ω), unless otherwise indicated.

k	: 1,000 (Kilo)
M	: 1,000,000 (Mega)
Chip R	: Chip Resistor
Chip VR	: Chip Variable Resistor
Comp. R	: Composition Resistor
CR	: Carbon Film Resistor
FR	: Fusible Resistor
MFR	: Metal Film Resistor
MPR	: Metal Plate Resistor
OMR	: Oxide Metal Film Resistor
PMR	: Precision Metal Film Resistor
UFR	: Unflammable Resistor
VR	: Variable Resistor (Potentiometer)
WR	: Wire Wound Resistor

CAPACITORS—All capacitance values are in μF, unless otherwise indicated.

pF	: μμF (Pico farad)
C Cap	: Caramic Capacitor
Chip Cap	: Chip Capacitor
Chip T Cap	: Chip Tantalum Capacitor
E Cap	: Electrolytic Capacitor
FM Cap	: Film Mica Capacitor
LL Cap	: Low Leak Current Electrolytic Capacitor
MM Cap	: Metalized Mylar Capacitor
MP Cap	: Metalized Paper Capacitor
MY Cap	: Mylar Capacitor
NP Cap	: Non-polar Capacitor
PC Cap	: Polycarbonate Capacitor
PP Cap	: Polypropylene Capacitor
PS Cap	: Polystyrol Capacitor
T Cap	: Tantalum Capacitor
TF Cap	: Thin Film Capacitor
TR Cap	: Trimmer Capacitor

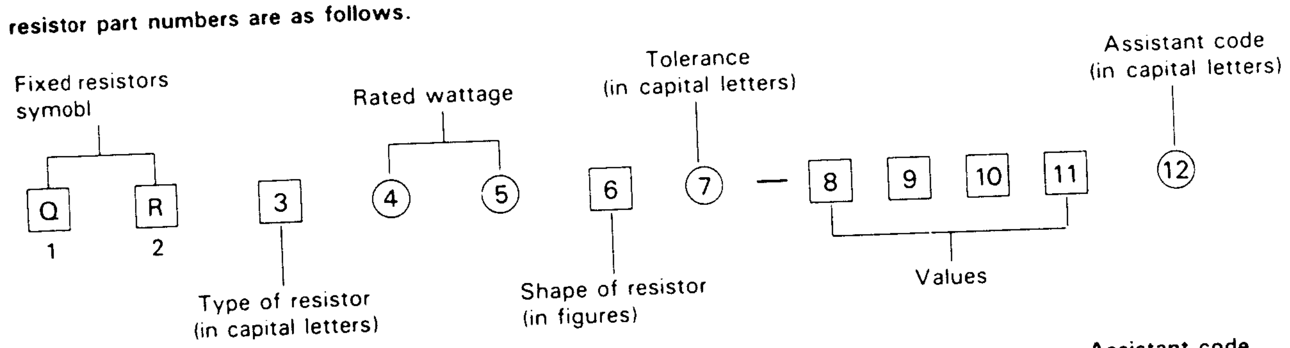
NOTES:

- [2 digits] indicates circuit board symbol number.
- "X " indicates quantity per set.

6.1 STANDARD PART NUMBER CODING

6.1.1 Fixed resistor coding

Fixed resistor part numbers are as follows.


Fixed resistors symobl
Q
R
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Type of resistor (in capital letters)
Rated wattage
4
5
6
Shape of resistor (in figures)
Tolerance (in capital letters)
7
—
8
9
10
11
Values
Assistant code (in capital letters)
12

Type of resistor (third digit)

C	Composition resistors
D	Carbon film resistors
F	Unflammable resistors
G	Oxide metal film resistors
H	Fusible resistors
M	Metal plate resistors
S	Metal glazed resistors
V	Precision metal film resistors
W	Wire wound resistors
X	Metal film resistors
Z	Special resistors

Rated wattage (fourth and fifth digits)

A0	1/10 W
18	1/8 W
16	1/6 W
14	1/4 W
12	1/2 W
01	1 W
02	2 W
03	3 W
04	4 W
05	5 W
06	6 W
07	7 W
75	7.5 W
08	8 W
10	10 W
15	15 W
A6	16 W
20	20 W
30	30 W

Tolerance (seventh digit)

F	± 1 %
G	± 2 %
J	± 5 %
K	± 10 %
M	± 20 %

Assistant code (twelfth digit)

A	Small type
B	Small type
S	Small type
Y	Lead taping
Z	Lead taping

Values (eighth — tenth or eleventh digits)

examples:

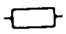
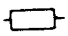
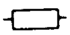
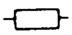
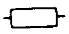
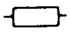
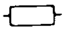
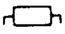
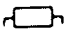
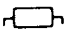
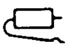
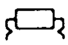
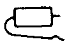
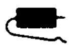
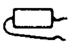
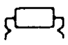
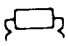
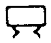
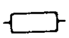
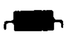
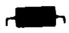
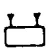
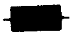
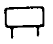
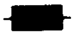
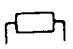
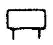
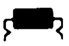
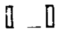
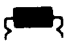
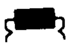
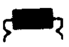
R47		0.47 Ω
4R7		4.7 Ω
470	47×10^0	47 Ω
471	47×10^1	470 Ω
472	47×10^2	4.7 kΩ
473	47×10^3	47 kΩ
474	47×10^4	470 kΩ
475	47×10^5	4.7 MΩ

QRV resistance shown by four digits:

4640	464×10^0	464 Ω
4641	464×10^1	4.64 kΩ
4642	464×10^2	46.4 kΩ

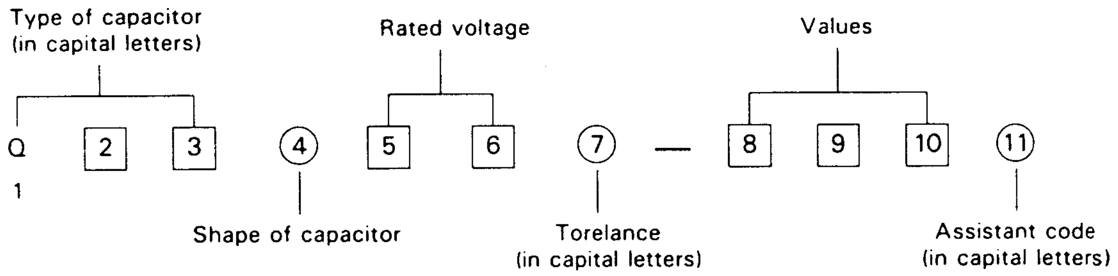
Shape of resistor (sixth digit)

Note: ■ indicates flame retardant resistor.

Shape of resistor \ Type of resistor	C	D	F	G	H	M	S	V	W	X
1										
2										
3										
4										
5									(L) type	
6										
7			Lug (B) type							
8			Lug (A) type				 Chip			
9			Lug (C) type							

6.1.2 Fixed capacitor coding

Fixed capacitor part numbers are as follows.


Type of capacitor
(in capital letters)
Rated voltage
Values
Q
1
2
3
④
5
6
⑦
—
8
9
10
⑪
Shape of capacitor
Torelance
(in capital letters)
Assistant code
(in capital letters)

Ceramic capacitors

Type of capacitor (first – third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Mono-direction	Kink lead	Axial lead	Axial forming lead	Chip
QCC	Ceramic	1		4	5	
QCD	High capacitance					A
QCF	High capacitance	1,4	3			8,A
QCS	Temperature compensation	1	3	4	5	8,A
QCT	Temperature compensation	Special coding				8,A
QCV	Ceramic			1	3	
QCX	Ceramic			1	3	
QCY	High capacitance	1,4	3	6	7	8,A
QCZ	Special type	Special coding				
QCB	Ceramic			B	C	

Electrolytic capacitors

Type of capacitor (first-third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Mono-direction	Anti-stress	Forming	Snap-in
QEB	Low leakage		4	5	6	
QEC	Low leakage		4,8,A	9,B	6,C	
QEE	Tantalum (normal)		4	5	6	
	Tantalum (small)		8			
QEF	Chip tantalum	8 (chip type)				
QEG	Low impedance		4			
QEK	Miniature type		4	5	6	
QEL	Small type		4	5	6	7
QEM	Small type		4,A	5	6	
QEN	Non-polar	2	4	5	6	
QEP	Non-polar (small)		4,A	5,B	6,C	
QER	Miniature type		4	5	6	
QET	Small type	2	4,A	5,B	6,C	7
QEU	Small type		4	5	6	
QEV	Small type		4		6	7
QEW	Normal	2	4	5	6	7

Paper film capacitors

Type of capacitor (first – third digits)		Shape of capacitor (fourth digit)				
			Normal		Flame retardant	
Symbol	Characteristics	Tubular	Mono-direction	Kink lead	Mono-direction	Kink lead
QFA	Metalized polypropylene				7	
QFE	Metalized mylar				5	
QFF	Film mica		4			
QFG	Polypropylene film		4	8		
QFH	Metalized mylar	2	4	3	5,7	6
QFJ	Mylar (special)		4			
QFK	Metalized mylar (small)				5	
QFM	Mylar	2	4	3,7	5	6
QFN	Mylar (small)		4	3		
QFP	Polypropylene		4	3,8		
QFS	Polystyrole	2	4	3		
QFV	Thin film		4	8		
QFZ	Special type	Special coding				

Rated voltage (fifth and sixth digits)

Fifth digit \ Sixth digit	A	B	C	D	E	F	G	H	J	K	V	W	X
0						3.15	4.0		6.3				
1	10		16	20	25		40	50	63	80	35		
2	100	125	160	200	250	315	400	500	630		350	450	600
3	1000	1250		2000				5000					

Tolerance (seventh digit)

A	$^{+100}_{-10}$ %	M	±20 %
F	±1 %	N	±30 %
G	±2 %	P	$^{+100}_{-0}$ %
H	$^{+50}_{-10}$ %	R	$^{+30}_{-10}$ %
J	±5 %	X	$^{+40}_{-20}$ %
K	±10 %	Z	$^{+80}_{-20}$ %

Values (eighth – tenth digits)

Example : Values are in picofarads

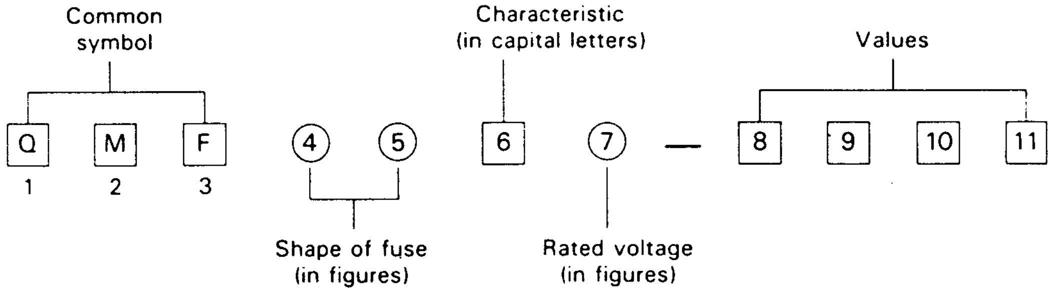
101	.... 10×10^1 pF	100 pF
102	.... 10×10^2 pF	1,000 pF (0.001 μF)
103	.... 10×10^3 pF	10,000 pF (0.01 μF)
104	.... 10×10^4 pF	100,000 pF (0.1 μF)
105	.... 10×10^5 pF	1 μF
5R0	....	5.0 pF

Assistant code (eleventh digit)

G	Small size
Z	Lead taping
Y	Lead taping

6.1.3 Fuse coding

Standard fuse part numbers are as follows.


Common symbol
Characteristic (in capital letters)
Values
Q
M
F
1
2
3
④
⑤
6
⑦
—
8
9
10
11
Shape of fuse (in figures)
Rated voltage (in figures)

Shape of fuse
(fourth and fifth digits)

51	φ5.2 × 20 mm
60	φ6.4 × 30 mm
61	φ6.35 × 31.8 mm
63	φ6.4 × 30 mm with lead wires
66	φ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage
(seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V 1.25 – 6.3 A : AC125 V

Values
(eighth-tenth or eleventh digits)
example:

R63	0.63 A
1R0	1.0 A
2R5	2.5 A
100	10 A
R315	0.315 A
1R25	1.25 A

Characteristics (sixth digit)

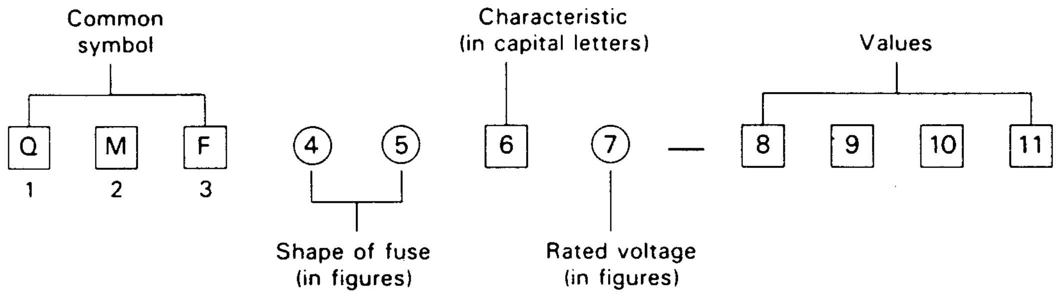
Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

6. MAIN BOARD ASSEMBLY <01>

#,⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB10002K-01	MAIN BOARD ASSY
	IC1	S-81250AG	IC
	IC2	M5236ML	IC
	IC3	BA6993F	IC
	IC101	BU3767K	IC
	IC102	M51799FP	IC
	IC103	M52410FP	IC
	IC104	NJM2904E	IC
	IC105	VC5026G	IC
	IC106	AFZ74A002X1	IC
	IC107	BU4011BF	IC
	IC301	BA7757K	IC
	IC401	HD6305Z0F-CV06	IC
⚠	IC402	S8054HN	IC
	IC403	BU4584BF	IC
	IC404	M54543ASL-A	IC
	Q1	2SB1009(PQ)	TRANSISTOR
	Q2	DTA124EU	TRANSISTOR
	Q3	DTC144EU	TRANSISTOR
	Q4	2SJ146	TRANSISTOR
	Q5	2SJ146	TRANSISTOR
	Q102	2SK665	TRANSISTOR
	Q103	2SC4081	TRANSISTOR
	OR	2SD1819	TRANSISTOR
	Q106	2SK665	TRANSISTOR
	Q110	DTC144EU	TRANSISTOR
	Q111	2SK665	TRANSISTOR
	Q112	DTC144EU	TRANSISTOR
	Q113	2SK665	TRANSISTOR
	Q114	FMG2	TRANSISTOR
	Q120	DTC144EU	TRANSISTOR
	Q121	DTC144EU	TRANSISTOR
	Q122	DTC144EU	TRANSISTOR
	Q125	2SB798(LK)	TRANSISTOR
	Q126	2SB798(LK)	TRANSISTOR
	Q127	2SB798(LK)	TRANSISTOR
	Q130	2SC4081	TRANSISTOR
	OR	2SD1819	TRANSISTOR
	Q131	FMG2	TRANSISTOR
	Q302	DTA124EU	TRANSISTOR
	Q303	FMW3	TRANSISTOR
	Q304	2SC4081(S)	TRANSISTOR
	Q305	2SC4081(S)	TRANSISTOR
	Q306	2SA1036K(QR)	TRANSISTOR
	Q307	2SA1036K(QR)	TRANSISTOR
	Q308	DTC144EU	TRANSISTOR
	Q309	FMG1	TRANSISTOR
	Q310	DTC144ES	TRANSISTOR
	Q401	2SK665	TRANSISTOR
	Q402	2SA1576	TRANSISTOR
	Q403	2SK665	TRANSISTOR
	Q404	FMC2	TRANSISTOR
	Q405	2SK665	TRANSISTOR
	Q406	2SK665	TRANSISTOR
	Q407	2SK665	TRANSISTOR
	Q408	2SK665	TRANSISTOR
	Q409	2SK665	TRANSISTOR
	Q410	2SK665	TRANSISTOR
	Q411	2SK665	TRANSISTOR
	Q412	2SK665	TRANSISTOR
	Q413	2SK665	TRANSISTOR
	Q414	2SK665	TRANSISTOR
	Q415	2SK665	TRANSISTOR
	Q416	2SK665	TRANSISTOR
	Q417	2SA1576	TRANSISTOR
	Q418	2SK665	TRANSISTOR
	Q419	2SK665	TRANSISTOR
	D1	DAN202U	DIODE
	D2	FMN1	DIODE
	D102	MA141WK	DIODE
	OR	DAN202U	DIODE
	D103	MA704	DIODE
	D104	MA141WK	DIODE
	OR	DAN202U	DIODE
	D107	MA141WK	DIODE
	D108	MA3075H	ZENER DIODE
	OR	RD7.5MB3	ZENER DIODE
	D110	1SS133	DIODE
⚠	D401	IMN10	DIODE
	D402	DAP202U	DIODE
	D403	DAP202U	DIODE
	D405	1SS133	DIODE
	R1	QRSA08J-221YN	RESISTOR
	R3	QRSA08J-822YN	RESISTOR
	R4	NVP1301-102N	V RESISTOR,REG 8V ADJ
	R5	NRSA63J-104N	RESISTOR
	R6	NRSA63J-154N	RESISTOR
	R7	NRSA63J-104N	RESISTOR
	R8	NRSA63J-154N	RESISTOR
	R9	NRSA63J-104N	RESISTOR
	R11	NRSA63J-104N	RESISTOR
	R12	NRSA63J-104N	RESISTOR
	R13	NRSA63J-103N	RESISTOR
	R14	NRSA63J-103N	RESISTOR
	R15	NRSA63J-123N	RESISTOR
	R16	NRSA63J-0R0A	RESISTOR
	R17	NRSA63J-105N	RESISTOR
	R19	QRSA08J-102YN	RESISTOR
	R20	NRSA63J-824N	RESISTOR
	R21	NRSA63J-105N	RESISTOR
	R22	NRSA63J-824N	RESISTOR
	R101	YU40174	V RESISTOR,TRACKING VR
	R102	NRSA63J-102N	RESISTOR
	R103	NVP1301-103N	V RESISTOR,TRACKING PRESET
	R104	NRSA63J-102N	RESISTOR
	R105	NRSA63J-103N	RESISTOR
	R112	NRSA63J-103N	RESISTOR
	R114	NRSA63J-102N	RESISTOR
	R116	NRSA63J-394N	RESISTOR
	R117	NRSA63J-103N	RESISTOR
	R118	NRSA63J-103N	RESISTOR
	R119	NRSA63J-471N	RESISTOR
	R120	NRSA63J-105N	RESISTOR
	R121	NRSA63J-222N	RESISTOR
	R126	NRSA63J-562N	RESISTOR
	R127	NRSA63J-123N	RESISTOR
	R128	NRSA63J-183N	RESISTOR
	R129	NRSA63J-105N	RESISTOR
	R131	NRSA63J-154N	RESISTOR
	R132	NRSA63J-184N	RESISTOR
	R133	NRSA63J-824N	RESISTOR
	R135	NRSA63J-154N	RESISTOR
	R136	NRSA63J-184N	RESISTOR
	R137	NRSA63J-102N	RESISTOR
	R138	NRSA63J-102N	RESISTOR
	R139	NRSA63J-473N	RESISTOR
	R140	NRSA63J-473N	RESISTOR
	R141	NRSA63J-473N	RESISTOR
	R142	NRSA63J-333N	RESISTOR

6.1.3 Fuse coding

Standard fuse part numbers are as follows.


Common symbol
Characteristic (in capital letters)
Values
Q
M
F
1
2
3
④
⑤
6
⑦
—
8
9
10
11
Shape of fuse (in figures)
Rated voltage (in figures)

Shape of fuse
(fourth and fifth digits)

51	φ5.2 × 20 mm
60	φ6.4 × 30 mm
61	φ6.35 × 31.8 mm
63	φ6.4 × 30 mm with lead wires
66	φ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage
(seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V 1.25 – 6.3 A : AC125 V

Values
(eighth-tenth or eleventh digits)
example:

R63	0.63 A
1R0	1.0 A
2R5	2.5 A
100	10 A
R315	0.315 A
1R25	1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

6. MAIN BOARD ASSEMBLY <01>

#,⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB10002K-01	MAIN BOARD ASSY
	IC1	S-81250AG	IC
	IC2	M5236ML	IC
	IC3	BA6993F	IC
	IC101	BU3767K	IC
	IC102	M51799FP	IC
	IC103	M52410FP	IC
	IC104	NJM2904E	IC
	IC105	VC5026G	IC
	IC106	AFZ74A002X1	IC
	IC107	BU4011BF	IC
	IC301	BA7757K	IC
	IC401	HD6305Z0F-CV06	IC
⚠	IC402	S8054HN	IC
	IC403	BU4584BF	IC
	IC404	M54543ASL-A	IC
	Q1	2SB1009(PQ)	TRANSISTOR
	Q2	DTA124EU	TRANSISTOR
	Q3	DTC144EU	TRANSISTOR
	Q4	2SJ146	TRANSISTOR
	Q5	2SJ146	TRANSISTOR
	Q102	2SK665	TRANSISTOR
	Q103	2SC4081	TRANSISTOR
	OR	2SD1819	TRANSISTOR
	Q106	2SK665	TRANSISTOR
	Q110	DTC144EU	TRANSISTOR
	Q111	2SK665	TRANSISTOR
	Q112	DTC144EU	TRANSISTOR
	Q113	2SK665	TRANSISTOR
	Q114	FMG2	TRANSISTOR
	Q120	DTC144EU	TRANSISTOR
	Q121	DTC144EU	TRANSISTOR
	Q122	DTC144EU	TRANSISTOR
	Q125	2SB798(LK)	TRANSISTOR
	Q126	2SB798(LK)	TRANSISTOR
	Q127	2SB798(LK)	TRANSISTOR
	Q130	2SC4081	TRANSISTOR
	OR	2SD1819	TRANSISTOR
	Q131	FMG2	TRANSISTOR
	Q302	DTA124EU	TRANSISTOR
	Q303	FMW3	TRANSISTOR
	Q304	2SC4081(S)	TRANSISTOR
	Q305	2SC4081(S)	TRANSISTOR
	Q306	2SA1036K(QR)	TRANSISTOR
	Q307	2SA1036K(QR)	TRANSISTOR
	Q308	DTC144EU	TRANSISTOR
	Q309	FMG1	TRANSISTOR
	Q310	DTC144ES	TRANSISTOR
	Q401	2SK665	TRANSISTOR
	Q402	2SA1576	TRANSISTOR
	Q403	2SK665	TRANSISTOR
	Q404	FMC2	TRANSISTOR
	Q405	2SK665	TRANSISTOR
	Q406	2SK665	TRANSISTOR
	Q407	2SK665	TRANSISTOR
	Q408	2SK665	TRANSISTOR
	Q409	2SK665	TRANSISTOR
	Q410	2SK665	TRANSISTOR
	Q411	2SK665	TRANSISTOR
	Q412	2SK665	TRANSISTOR
	Q413	2SK665	TRANSISTOR
	Q414	2SK665	TRANSISTOR
	Q415	2SK665	TRANSISTOR
	Q416	2SK665	TRANSISTOR
	Q417	2SA1576	TRANSISTOR
	Q418	2SK665	TRANSISTOR
	Q419	2SK665	TRANSISTOR
	D1	DAN202U	DIODE
	D2	FMN1	DIODE
	D102	MA141WK	DIODE
	OR	DAN202U	DIODE
	D103	MA704	DIODE
	D104	MA141WK	DIODE
	OR	DAN202U	DIODE
	D107	MA141WK	DIODE
	D108	MA3075H	ZENER DIODE
	OR	RD7.5MB3	ZENER DIODE
	D110	1SS133	DIODE
⚠	D401	IMN10	DIODE
	D402	DAP202U	DIODE
	D403	DAP202U	DIODE
	D405	1SS133	DIODE
	R1	QRSA08J-221YN	RESISTOR
	R3	QRSA08J-822YN	RESISTOR
	R4	NVP1301-102N	V RESISTOR,REG 8V ADJ
	R5	NRSA63J-104N	RESISTOR
	R6	NRSA63J-154N	RESISTOR
	R7	NRSA63J-104N	RESISTOR
	R8	NRSA63J-154N	RESISTOR
	R9	NRSA63J-104N	RESISTOR
	R11	NRSA63J-104N	RESISTOR
	R12	NRSA63J-104N	RESISTOR
	R13	NRSA63J-103N	RESISTOR
	R14	NRSA63J-103N	RESISTOR
	R15	NRSA63J-123N	RESISTOR
	R16	NRSA63J-0R0A	RESISTOR
	R17	NRSA63J-105N	RESISTOR
	R19	QRSA08J-102YN	RESISTOR
	R20	NRSA63J-824N	RESISTOR
	R21	NRSA63J-105N	RESISTOR
	R22	NRSA63J-824N	RESISTOR
	R101	YU40174	V RESISTOR,TRACKING VR
	R102	NRSA63J-102N	RESISTOR
	R103	NVP1301-103N	V RESISTOR,TRACKING PRESET
	R104	NRSA63J-102N	RESISTOR
	R105	NRSA63J-103N	RESISTOR
	R112	NRSA63J-103N	RESISTOR
	R114	NRSA63J-102N	RESISTOR
	R116	NRSA63J-394N	RESISTOR
	R117	NRSA63J-103N	RESISTOR
	R118	NRSA63J-103N	RESISTOR
	R119	NRSA63J-471N	RESISTOR
	R120	NRSA63J-105N	RESISTOR
	R121	NRSA63J-222N	RESISTOR
	R126	NRSA63J-562N	RESISTOR
	R127	NRSA63J-123N	RESISTOR
	R128	NRSA63J-183N	RESISTOR
	R129	NRSA63J-105N	RESISTOR
	R131	NRSA63J-154N	RESISTOR
	R132	NRSA63J-184N	RESISTOR
	R133	NRSA63J-824N	RESISTOR
	R135	NRSA63J-154N	RESISTOR
	R136	NRSA63J-184N	RESISTOR
	R137	NRSA63J-102N	RESISTOR
	R138	NRSA63J-102N	RESISTOR
	R139	NRSA63J-473N	RESISTOR
	R140	NRSA63J-473N	RESISTOR
	R141	NRSA63J-473N	RESISTOR
	R142	NRSA63J-333N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R152	NRSA63J-683N	RESISTOR
	R154	NRSA63J-274N	RESISTOR
	R160	NRSA63J-561N	RESISTOR
	R161	QRSA08J-104YN	RESISTOR
	R162	QRSA08J-154YN	RESISTOR
	R163	NRSA63J-334N	RESISTOR
	R164	NRSA63J-563N	RESISTOR
	R166	NRSA63J-0R0A	RESISTOR
	R168	NRSA63J-683N	RESISTOR
	R170	NRSA63J-102N	RESISTOR
	R171	NRSA63J-102N	RESISTOR
	R172	NRSA63J-102N	RESISTOR
	R173	NRSA63J-102N	RESISTOR
	R174	NRSA63J-333N	RESISTOR
	R182	NRSA63J-473N	RESISTOR
	R183	NRSA63J-473N	RESISTOR
	R184	NRSA63J-333N	RESISTOR
	R185	NRSA63J-105N	RESISTOR
	R186	NRSA63J-103N	RESISTOR
	R187	NRSA63J-0R0A	RESISTOR
	R188	NRSA63J-472N	RESISTOR
	R189	NRSA63J-474N	RESISTOR
	R190	NRSA63J-103N	RESISTOR
	R202	NRSA63J-473N	RESISTOR
	R203	NRSA63J-473N	RESISTOR
	R204	NRSA63J-473N	RESISTOR
	R210	NRSA63J-683N	RESISTOR
	R211	NRSA63J-183N	RESISTOR
	R212	NRSA63J-103N	RESISTOR
	R213	NRSA63J-103N	RESISTOR
	R214	NRSA63J-103N	RESISTOR
	R219	NRSA63J-560N	RESISTOR
	R220	NRSA63J-560N	RESISTOR
	R221	NRSA63J-333N	RESISTOR
	R222	NRSA63J-333N	RESISTOR
	R223	NRSA63J-103N	RESISTOR
	R224	NRSA63J-333N	RESISTOR
	R301	NRSA63J-302N	RESISTOR
	R303	NRSA63J-102N	RESISTOR
	R305	NRSA63J-100N	RESISTOR
	R306	NRSA63J-222N	RESISTOR
	R307	NRSA63J-103N	RESISTOR
	R308	NRSA63J-392N	RESISTOR
	R309	NVP1301-103N	V RESISTOR,AUDIO PB LEVEL
	R310	NRSA63J-182N	RESISTOR
	R311	NRSA63J-124N	RESISTOR
	R312	NRSA63J-121N	RESISTOR
	R313	NRSA63J-223N	RESISTOR
	R314	NRSA63J-470N	RESISTOR
	R315	NRSA63J-185N	RESISTOR
	R316	NRSA63J-822N	RESISTOR
	R317	NRSA63J-223N	RESISTOR
	R318	NRSA63J-223N	RESISTOR
	R320	NRSA63J-471N	RESISTOR
	R321	NRSA63J-272N	RESISTOR
	R322	NRSA63J-121N	RESISTOR
	R323	NRSA63J-273N	RESISTOR
	R324	NRSA63J-102N	RESISTOR
	R325	NRSA63J-0R0A	RESISTOR
	R326	NRSA63J-123N	RESISTOR
	R327	NRSA63J-123N	RESISTOR
	R328	NRSA63J-123N	RESISTOR
	R329	NRSA63J-123N	RESISTOR
	R330	NRSA63J-562N	RESISTOR
	R331	NRSA63J-272N	RESISTOR
	R332	NRSA63J-0R0A	RESISTOR
	R333	NRSA63J-683N	RESISTOR
	R334	NRSA63J-683N	RESISTOR
	R335	NRSA63J-100N	RESISTOR
	R336	NRSA63J-100N	RESISTOR
	R337	NRSA63J-0R0A	RESISTOR
	R339	NRSA63J-472N	RESISTOR
	R340	NRSA63J-0R0A	RESISTOR
	R341	NRSA63J-0R0A	RESISTOR
	R342	NVP1301-683N	V RESISTOR,AUDIO BIAS LEVEL
	R344	NRSA63J-272N	RESISTOR
	R345	NRSA63J-103N	RESISTOR
	R346	NRSA63J-103N	RESISTOR
	R347	NRSA63J-390N	RESISTOR
	R401	NRSA63J-153N	RESISTOR
	R402	NRSA63J-102N	RESISTOR
	R403	NRSA63J-103N	RESISTOR
	R404	NRSA63J-471N	RESISTOR
	R405	NRSA63J-105N	RESISTOR
	R406	NRSA63J-473N	RESISTOR
	R407	NRSA63J-473N	RESISTOR
	R408	NRSA63J-103N	RESISTOR
	R409	NRSA63J-473N	RESISTOR
	R410	NRSA63J-103N	RESISTOR
	R412	NRSA63J-153N	RESISTOR
	R413	NRSA63J-102N	RESISTOR
	R414	NRSA63J-103N	RESISTOR
	R416	NRSA63J-203N	RESISTOR
	R417	NRSA63J-103N	RESISTOR
	R418	NRSA63J-105N	RESISTOR
	R419	NRSA63J-203N	RESISTOR
	R420	NRSA63J-103N	RESISTOR
	R421	NRSA63J-102N	RESISTOR
	R422	NRSA63J-203N	RESISTOR
	R423	NRSA63J-203N	RESISTOR
	R424	NRSA63J-563N	RESISTOR
	R425	NRSA63J-103N	RESISTOR
	R426	NRSA63J-823N	RESISTOR
	R427	NRSA63J-333N	RESISTOR
	R428	NRSA63J-102N	RESISTOR
	R429	NRSA63J-102N	RESISTOR
	R430	NRSA63J-203N	RESISTOR
	R431	NRSA63J-184N	RESISTOR
	R432	NRSA63J-103N	RESISTOR
	R433	NRSA63J-203N	RESISTOR
	R434	NRSA63J-102N	RESISTOR
	R435	NRSA63J-103N	RESISTOR
	R436	NRSA63J-203N	RESISTOR
	R437	NRSA63J-203N	RESISTOR
	R439	NRSA63J-472N	RESISTOR
	R441	NRSA63J-203N	RESISTOR
	R443	YU40044-D823YN	RESISTOR
	R444	YU40044-D683YN	RESISTOR
	R445	NRSA63J-102N	RESISTOR
	R446	NRSA63J-102N	RESISTOR
	R447	NRSA63J-153N	RESISTOR
	R448	NRSA63J-102N	RESISTOR
	R449	NRSA63J-153N	RESISTOR
	R450	NRSA63J-102N	RESISTOR
	R451	NRSA63J-153N	RESISTOR
	R453	NRSA63J-0R0A	RESISTOR
	R455	NRSA63J-104N	RESISTOR
	R457	NRSA63J-104N	RESISTOR
	R460	NRSA63J-105N	RESISTOR

#,⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R461	NRSA63J-102N	RESISTOR
	R462	NRSA63J-105N	RESISTOR
	R463	NRSA63J-102N	RESISTOR
	R469	NRSA63J-102N	RESISTOR
	R470	NRSA63J-102N	RESISTOR
	R471	NRSA63J-271N	RESISTOR
	R472	NRSA63J-102N	RESISTOR
	R473	NRSA63J-102N	RESISTOR
	R474	NRSA63J-153N	RESISTOR
	R475	NRSA63J-0R0A	RESISTOR
	R476	NRSA63J-0R0A	RESISTOR
	R477	NRSA63J-102N	RESISTOR
	R478	NRSA63J-102N	RESISTOR
	R479	NRSA63J-102N	RESISTOR
	R480	NRSA63J-102N	RESISTOR
	R481	NRSA63J-102N	RESISTOR
	R482	NRSA63J-473N	RESISTOR
	R483	NRSA63J-102N	RESISTOR
	R484	NRSA63J-102N	RESISTOR
	R485	NRSA63J-102N	RESISTOR
	R486	NRSA63J-223N	RESISTOR
	R487	NRSA63J-223N	RESISTOR
	R488	NRSA63J-223N	RESISTOR
	R489	NRSA63J-223N	RESISTOR
	R490	NRSA63J-103N	RESISTOR
	R491	NRSA63J-103N	RESISTOR
	R492	NRSA63J-103N	RESISTOR
	R493	NRSA63J-103N	RESISTOR
	R494	NRSA63J-102N	RESISTOR
	R495	NRSA63J-101N	RESISTOR
	R497	NRSA63J-102N	RESISTOR
	R501	NRSA63J-102N	RESISTOR
	R502	NRSA63J-102N	RESISTOR
	R503	NRSA63J-473N	RESISTOR
	R504	NRSA63J-152N	RESISTOR
	R505	NRSA63J-332N	RESISTOR
	R508	NRSA63J-0R0A	RESISTOR
	R509	NRSA63J-0R0A	RESISTOR
	R510	NRSA63J-0R0A	RESISTOR
	R512	NRSA63J-473N	RESISTOR
	R513	NRSA63J-102N	RESISTOR
	R514	NRSA63J-103N	RESISTOR
	R515	NRSA63J-303N	RESISTOR
	R516	NRSA63J-105N	RESISTOR
	R517	NRSA63J-225N	RESISTOR
	R519	NRSA63J-102N	RESISTOR
	R522	NRSA63J-273N	RESISTOR
	R523	NRSA63J-102N	RESISTOR
	R524	QRD161J-203	RESISTOR
	RA101	YU40172-102NY	RESISTOR ARRAY
	RA102	YU40172-104NY	RESISTOR ARRAY
	RA103	YU40172-332NY	RESISTOR ARRAY
	RA401	YU40172-102NY	RESISTOR ARRAY
	RA402	YU40172-102NY	RESISTOR ARRAY
	RA403	YU40172-102NY	RESISTOR ARRAY
	RA404	YU40172-102NY	RESISTOR ARRAY
	RA405	YU40172-102NY	RESISTOR ARRAY
	RA406	YU40172-102NY	RESISTOR ARRAY
	B101	NRSA63J-0R0A	RESISTOR
	B110	NRSA63J-0R0A	RESISTOR
	B112	NRSA63J-0R0A	RESISTOR
	B114	NRSA63J-0R0A	RESISTOR
	C1	QEK41CM-476	E CAPACITOR
	C2	QEK41CM-476	E CAPACITOR
	C3	QED41CM-476	E CAPACITOR

#,⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C4	QED41CM-476	E CAPACITOR
	C5	QED41AM-826	E CAPACITOR
	C6	QED41AM-826	E CAPACITOR
	C7	QED41AM-826	E CAPACITOR
	C8	QCY81EK-473ZL	CAPACITOR
	OR	QCY81EK-473	CAPACITOR
	C9	QED41AM-826	E CAPACITOR
	C10	QCFA1EZ-104	CAPACITOR
	C15	QEF81EM-474	TANTAL CAPACITOR
	C16	QEE81DM-226	TANTAL CAPACITOR
	C101	QFZ0095-683	M CAPACITOR
	OR	QFZ9011-683	MM CAPACITOR
	C102	QFZ0095-104	MM CAPACITOR
	OR	QFZ9011-104	MM CAPACITOR
	C103	QCYA1HK-392	CAPACITOR
	C104	NCT06CH-270A	CAPACITOR
	C105	NCT06CH-270A	CAPACITOR
	C106	QEF81AM-106	TANTAL CAPACITOR
	C107	QCYA1HK-103	CAPACITOR
	C108	QCYA1HK-562	CAPACITOR
	C109	QCYA1HK-103	CAPACITOR
	C110	QCSA1HJ-102	CAPACITOR
	C111	QEPA1CM-106	NP E CAPACITOR
	C112	QEPA1CM-106	NP E CAPACITOR
	C115	NCF31CZ-104A	CAPACITOR
	C116	NCB31EK-103A	CAPACITOR
	C121	QCYA1HK-222	CAPACITOR
	C122	QFZ0096-224	MM CAPACITOR
	C124	QCYA1EK-223	CAPACITOR
	C126	QCYA1EK-223	CAPACITOR
	C127	QCYA1EK-223	CAPACITOR
	C128	QCYA1HK-222	CAPACITOR
	C129	QFZ0095-104	MM CAPACITOR
	C130	QER41AM-106	E CAPACITOR
	C141	NCB31HK-102A	CAPACITOR
	C142	NCF31CZ-104A	CAPACITOR
	C143	NCT06CH-100A	CAPACITOR
	C144	NCF31CZ-104A	CAPACITOR
	C145	NCB31HK-471A	CAPACITOR
	C146	NCS31HJ-101A	CAPACITOR
	C147	NCB31HK-102A	CAPACITOR
	C148	QCFA1EZ-104	CAPACITOR
	C149	NCB31HK-562A	CAPACITOR
	C150	PU59758-105	CAPACITOR
	C151	PU59758-105	CAPACITOR
	C161	NCB31EK-103A	CAPACITOR
	C162	NCB31EK-103A	CAPACITOR
	C163	QCYA1EK-223	CAPACITOR
	C164	QCYA1EK-223	CAPACITOR
	C165	QCYA1EK-223	CAPACITOR
	C166	QER41AM-336	E CAPACITOR
	C167	QER41AM-336	E CAPACITOR
	C168	QER41AM-336	E CAPACITOR
	C175	QCYA1HK-103	CAPACITOR
	C301	QEF81VM-224XB	TANTAL CAPACITOR
	OR	QEF81VM-224	TANTAL CAPACITO
	C303	QER41CM-106	E CAPACITOR
	C304	QEF81VM-104XB	TANTAL CAPACITOR
	OR	QEF81VM-104	TANTAL CAPACITO
	C306	QER40JM-336	E CAPACITOR
	C307	QER41AM-226	E CAPACITOR
	C308	QCYA1EK-223	CAPACITOR
	C309	QCYA1HK-681	CAPACITOR
	C310	QCYA1HK-272	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C311	QER41HM-474	E CAPACITOR
	C312	QER40JM-336	E CAPACITOR
	C313	QEPA0JM-226	NP E CAPACITOR
	C314	QER41HM-105	E CAPACITOR
	C315	QER41CM-106	E CAPACITOR
	C316	QER41CM-106	E CAPACITOR
	C318	QER40JM-226	E CAPACITOR
	C319	QFJ41HJ-682	M CAPACITOR
	C320	QER41HM-474	E CAPACITOR
	C322	QCYA1HK-471	CAPACITOR
	C323	NCB31HK-222A	CAPACITOR
	C324	NCB31HK-222A	CAPACITOR
	C325	QFZ9011-473	MM CAPACITOR
	C326	QER41AM-476	E CAPACITOR
	C330	QCYA1HK-472	CAPACITOR
	C331	NCB31HK-182A	CAPACITOR
	C332	NCB31HK-472A	CAPACITOR
	C334	NCB31HK-682A	CAPACITOR
	C335	NCB31HK-472A	CAPACITOR
	C336	NCB31HK-682A	CAPACITOR
	C401	QEF80JM-475	TANTAL CAPACITOR
	C402	NCS31HJ-330A	CAPACITOR
	C403	NCS31HJ-330A	CAPACITOR
	C404	QCFA1EZ-104	CAPACITOR
	C405	QEF80JM-475	TANTAL CAPACITOR
	C406	QCFA1EZ-104	CAPACITOR
	C407	QCFA1EZ-104	CAPACITOR
	C408	QCFA1EZ-333	CAPACITOR
	C409	NCB31EK-103A	CAPACITOR
	C412	NCB31HK-102A	CAPACITOR
	C413	YU40470-473	CAPACITOR
	L1	PU56181-470	COIL
	L2	PU55843-101K	COIL
		OR YU40500-101KZ	COIL
		OR PU59188-101K	COIL
	L302	PU56197-2	EQUALIZER
		OR PU56197-2-P	EQUALIZER
⚠	L303	YU40209	OSC COIL
	L304	PU59188-221K	COIL
	L401	YU40248-470KY	COIL
	L402	PU59152-R22K	COIL
⚠	CF401	PU55812	RESONATOR
⚠	X1	YU40404	CRYSTAL RESONATOR
⚠		OR YU40405	CRYSTAL RESONATOR
	DD1	YU40169-01-03	DC-DC CONVERTER
	CL1	YU40245-01	WIRE CLAMP
	CL2	YU40245-03	WIRE CLAMP,X2
	CL3	YU40245-04	WIRE CLAMP
	HS1	YU40466-1-3	HEAT SINK
	SCW1	YQ40578	SCREW
	SLD1	YQ40511	SHEET
		YU40467	INSULATOR
	SLD2	YQ30195-1-2	SHIELD PLATE
	TP1	PU56278	TEST PIN
	TP2	PU56278	TEST PIN
	TP3	PU56278	TEST PIN
	TP4	PU54983	TEST PIN
	TP5	PU54983	TEST PIN
	TP101	PU56278	TEST POINT
	TP102	PU56278	TEST POINT
	TP103	PU56278	TEST POINT
	TP104	PU56278	TEST POINT
	TP105	PU56278	TEST POINT
	TP106	PU56278	TEST POINT
	TP107	PU56278	TEST POINT
	TP108	PU56278	TEST POINT

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	TP109	PU56278	TEST POINT
	TP110	PU56278	TEST PIN
	TP111	PU56278	TEST POINT
	TP302	PU56278	TEST POINT
	TP303	PU56278	TEST POINT
	TP304	PU56278	TEST POINT
	TP305	YU40482	TEST POINT
	TP306	YU40482	TEST POINT
	CN1	YU40101-12	CAP HOUSING,(BOARD TO BOARD)
	CN2	YU40108-6	FPC CONNECTOR
	CN3	YU40096-3	CAP HOUSING
	CN4	YU40096-2	CAP HOUSING
	CN5	YU40104-14	CAP HOUSING,(BOARD TO BOARD)
	CN6	YU40108-12	FPC CONNECTOR
	CN7	YU40096-6	CAP HOUSING
	CN8	YU40106-10	FPC CONNECTOR
	CN9	PU58655-6	CAP HOUSING
	CN11	YU40103-18	B/B CN.WFR-D6.5
	CN12	YU40096-7	CAP HOUSING
	CN13	YU40096-4	CAP HOUSING
	CN14	YU40096-3	CAP HOUSING
	CN15	YU40096-9	CAP HOUSING
	CN16	YU40106-15	FPC CONNECTOR
	CN17	YU40102-20	CAP HOUSING,(BOARD TO BOARD)
	CN18	YU40102-10	CAP HOUSING,(BOARD TO BOARD)
	CN19	YU40102-8	B/B CN.WFR-D12S
⚠	CP1	ICP-F15	CIRCUIT PROTECTOR
⚠	CP2	ICP-F15	CIRCUIT PROTECTOR
⚠	CP3	ICP-F15	CIRCUIT PROTECTOR
⚠	CP4	ICP-F15	CIRCUIT PROTECTOR
⚠	CP5	ICP-F20	CIRCUIT PROTECTOR

-VOLUME BOARD ASSEMBLY-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB30018C	VOLUME BOARD ASSY
	Q107	DTA124EU	TRANSISTOR
	R106	NVP1301-474N	V RESISTOR
	R107	NRSA63J-184N	RESISTOR
	R108	NVP1301-474N	V RESISTOR,PB SW POINT
	R109	NRSA63J-154N	RESISTOR
	R122	NRSA63J-564N	RESISTOR

– BUFFER RC BOARD ASSEMBLY –

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20049A	BUFFER RC BOARD ASSEMBLY
	R350	QRSA08K-4R7YN	RESISTOR
	C317	QCF81EZ-224	CAPACITOR

– H. TRAP BOARD ASSEMBLY –

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20050B	H.TRAP BOARD ASSY
	TRAP301	YU40488	TRAP
	IC302	NJM2904E	IC
	R351	QRSA08J-0R0Y	RESISTOR
	R352	QRSA08J-0R0Y	RESISTOR
	R353	QRSA08J-0R0Y	RESISTOR
	R354	QRSA08J-0R0Y	RESISTOR
	R355	QRSA08J-0R0Y	RESISTOR

– SWC BOARD ASSEMBLY –

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20059A	SWC.BOARD ASSEMBLY
	C123	QCYA1HK-332	CAPACITOR
	C125	QCYA1EK-223	CAPACITOR

– PS-2 BOARD ASSEMBLY –

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20060A	PS-2 BOARD ASSEMBLY

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q132	DTC144EK	TRANSISTOR
	Q133	FMG2	TRANSISTOR
	Q134	FMG2	TRANSISTOR
	D111	MA704	DIODE
	R226	QRSA08J-103YN	RESISTOR

7. Y/C BOARD ASSEMBLY <02>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB10007A-01	Y/C BOARD ASSY
	IC1	BA7600K	IC
	IC2	AN3212S	IC
		OR AN3212S-X2	IC
	IC3	AN3323S	IC
		OR AN3323S-W2	IC
	IC4	M51646FP	IC
	IC5	AN6308S	IC
	IC6	MSM6989MS	IC
	IC7	AN8009	IC
	IC8	BU4013BF	IC
	IC9	BA226F	IC
	IC10	BU4030BF	IC
	IC11	BA7023F	IC
	IC12	M51648FP	IC
	Q1	DTC144EU	TRANSISTOR
	Q2	DTC144EU	TRANSISTOR
	Q3	2SC4081	TRANSISTOR
	Q4	2SC4081	TRANSISTOR
	Q5	2SC4081	TRANSISTOR
	Q6	2SC4081	TRANSISTOR
	Q7	2SC4081	TRANSISTOR
	Q8	2SC4081	TRANSISTOR
	Q9	2SC4081	TRANSISTOR
	Q10	2SA1576	TRANSISTOR
	Q11	2SC4081	TRANSISTOR
	Q12	2SC4081	TRANSISTOR
	Q13	2SA1576	TRANSISTOR
	Q14	2SB624-T1BBV4	TRANSISTOR
		OR 2SB624-T1BBV5	TRANSISTOR
	Q15	2SB624-T1BBV4	TRANSISTOR
		OR 2SB624-T1BBV5	TRANSISTOR
	Q16	2SA1576	TRANSISTOR
	Q17	FMW1	TRANSISTOR
	Q18	NRSA63J-0R0A	RESISTOR
	Q19	DTC144EU	TRANSISTOR
	Q20	DTC144EU	TRANSISTOR
	Q21	2SA1576	TRANSISTOR
	Q22	2SC4081	TRANSISTOR
	Q23	2SB624-T1BBV4	TRANSISTOR
		OR 2SB624-T1BBV5	TRANSISTOR
	Q24	2SB624-T1BBV4	TRANSISTOR
		OR 2SB624-T1BBV5	TRANSISTOR
	Q25	DTC144EU	TRANSISTOR
	Q26	2SB624-T1BBV4	TRANSISTOR
		OR 2SB624-T1BBV5	TRANSISTOR
	Q27	DTC144EU	TRANSISTOR
	Q28	2SB624-T1BBV4	TRANSISTOR
		OR 2SB624-T1BBV5	TRANSISTOR
	Q29	DTC144EU	TRANSISTOR
	Q30	DTC144EU	TRANSISTOR
	D1	DAN202U	DIODE
	D2	DAN202U	DIODE
	D4	DAN202U	DIODE
	D5	DA204U	DIODE
	D6	DAN202U	DIODE
	D7	DAN202U	DIODE
	D8	DAN202U	DIODE
	D9	DAN202U	DIODE
	D10	DA204U	DIODE
	D11	DAN202U	DIODE
	D12	DAN202U	DIODE
	D13	DAN202U	DIODE
	D14	DA204U	DIODE
	R1	NRSA63J-222N	RESISTOR
	R2	NRSA63J-821N	RESISTOR
	R3	NRSA63J-102N	RESISTOR
	R4	NRSA63J-182N	RESISTOR
	R5	NRSA63J-222N	RESISTOR
	R6	NRSA63J-122N	RESISTOR
	R9	NRSA63J-122N	RESISTOR
	R10	NRSA63J-222N	RESISTOR
	R11	NRSA63J-222N	RESISTOR
	R12	NRSA63J-122N	RESISTOR
	R13	NRSA63J-222N	RESISTOR
	R14	NRSA63J-821N	RESISTOR
	R16	NRSA63J-152N	RESISTOR
	R17	NRSA63J-222N	RESISTOR
	R18	NRSA63J-222N	RESISTOR
	R19	NRSA63J-561N	RESISTOR
	R20	NRSA63J-222N	RESISTOR
	R21	NRSA63J-0R0A	RESISTOR
	R22	NRSA63J-122N	RESISTOR
	R23	NRSA63J-102N	RESISTOR
	R24	NRSA63J-222N	RESISTOR
	R25	NRSA63J-103N	RESISTOR
	R26	NRSA63J-682N	RESISTOR
	R27	NRSA63J-680N	RESISTOR
	R28	NRSA63J-473N	RESISTOR
	R29	NRSA63J-152N	RESISTOR
	R30	NRSA63J-682N	RESISTOR
	R31	NRSA63J-562N	RESISTOR
	R32	NRSA63J-562N	RESISTOR
	R33	NRSA63J-332N	RESISTOR
	R34	NRSA63J-821N	RESISTOR
	R35	NRSA63J-182N	RESISTOR
	R36	NRSA63J-181N	RESISTOR
	R37	NRSA63J-472N	RESISTOR
	R38	NRSA63J-472N	RESISTOR
	R39	NRSA63J-681N	RESISTOR
	R40	NRSA63J-223N	RESISTOR
	R41	NRSA63J-102N	RESISTOR
	R42	NRSA63J-101N	RESISTOR
	R43	NRSA63J-393N	RESISTOR
	R44	NRSA63J-223N	RESISTOR
	R47	NRSA63J-621N	RESISTOR
	R48	NRSA63J-153N	RESISTOR
	R49	QRSA08J-475YN	RESISTOR
	R50	QRSA08J-225YN	RESISTOR
	R51	NRSA63J-152N	RESISTOR
	R52	NRSA63J-152N	RESISTOR
	R53	QRSA08J-335YN	RESISTOR
	R54	NRSA63J-122N	RESISTOR
	R55	QRSA08J-101YN	RESISTOR
	R56	NRSA63J-122N	RESISTOR
	R57	NRSA63J-270N	RESISTOR
	R58	NRSA63J-155N	RESISTOR
	R59	NRSA63J-152N	RESISTOR
	R60	NRSA63J-822N	RESISTOR

# ⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R61	NRSA63J-152N	RESISTOR
	R62	NRSA63J-152N	RESISTOR
	R63	NRSA63J-561N	RESISTOR
	R64	NRSA63J-102N	RESISTOR
	R65	NRSA63J-471N	RESISTOR
	R66	NRSA63J-471N	RESISTOR
	R67	QRSA08J-153YN	RESISTOR
	R68	NRSA63J-102N	RESISTOR
	R69	NRSA63J-681N	RESISTOR
	R70	NRSA63J-122N	RESISTOR
	R71	NRSA63J-121N	RESISTOR
	R72	NRSA63J-152N	RESISTOR
	R73	NRSA63J-154N	RESISTOR
	R74	NRSA63J-102N	RESISTOR
	R75	NRSA63J-182N	RESISTOR
	R76	NRSA63J-820N	RESISTOR
	R77	NRSA63J-561N	RESISTOR
	R78	NRSA63J-102N	RESISTOR
	R79	NRSA63J-102N	RESISTOR
	R81	NRSA63J-472N	RESISTOR
	R82	NRSA63J-562N	RESISTOR
	R83	NRSA63J-223N	RESISTOR
	R84	NRSA63J-102N	RESISTOR
	R85	NRSA63J-223N	RESISTOR
	R86	NRSA63J-102N	RESISTOR
	R88	NRSA63J-182N	RESISTOR
	R89	NRSA63J-182N	RESISTOR
	R90	NRSA63J-471N	RESISTOR
	R91	NRSA63J-471N	RESISTOR
	R92	NRSA63J-473N	RESISTOR
	R93	NRSA63J-223N	RESISTOR
	R94	NRSA63J-182N	RESISTOR
	R95	NRSA63J-182N	RESISTOR
	R96	NRSA63J-151N	RESISTOR
	R97	NRSA63J-223N	RESISTOR
	R98	NRSA63J-222N	RESISTOR
	R99	NRSA63J-471N	RESISTOR
	R100	NRSA63J-681N	RESISTOR
	R101	NRSA63J-561N	RESISTOR
	R102	NRSA63J-153N	RESISTOR
	R103	NRSA63J-681N	RESISTOR
	R104	NRSA63J-681N	RESISTOR
	R105	NRSA63J-223N	RESISTOR
	R106	NRSA63J-122N	RESISTOR
	R107	NRSA63J-102N	RESISTOR
	R108	NRSA63J-152N	RESISTOR
	R109	NRSA63J-393N	RESISTOR
	R110	NRSA63J-473N	RESISTOR
	R111	NRSA63J-222N	RESISTOR
	R112	NRSA63J-103N	RESISTOR
	R114	NRSA63J-334N	RESISTOR
	R115	NRSA63J-392N	RESISTOR
	R116	NRSA63J-104N	RESISTOR
	R117	NRSA63J-152N	RESISTOR
	R118	NRSA63J-391N	RESISTOR
	R119	NRSA63J-124N	RESISTOR
	R120	NRSA63J-472N	RESISTOR
	R121	NRSA63J-153N	RESISTOR
	R122	NRSA63J-223N	RESISTOR
	R123	NRSA63J-683N	RESISTOR
	R124	NRSA63J-105N	RESISTOR
	R125	NRSA63J-221N	RESISTOR
	R126	NRSA63J-184N	RESISTOR
	R131	NRSA63J-104N	RESISTOR
	R133	NRSA63J-103N	RESISTOR
	R134	NRSA63J-122N	RESISTOR
	R135	NRSA63J-122N	RESISTOR
	R139	NRSA63J-563N	RESISTOR
	R140	NRSA63J-103N	RESISTOR
	R141	NRSA63J-472N	RESISTOR
	R142	NRSA63J-472N	RESISTOR
	R143	NRSA63J-472N	RESISTOR
	R144	NRSA63J-472N	RESISTOR
	R149	NRSA63J-473N	RESISTOR
	R150	NRSA63J-473N	RESISTOR
	R151	NRSA63J-105N	RESISTOR
	R153	NRSA63J-223N	RESISTOR
	R155	NRSA63J-0R0A	RESISTOR
	R156	NRSA63J-564N	RESISTOR
	R157	NRSA63J-105N	RESISTOR
	R158	NRSA63J-104N	RESISTOR
	R161	NRSA63J-102N	RESISTOR
	R162	NRSA63J-681N	RESISTOR
	R163	NRSA63J-561N	RESISTOR
	R164	NRSA63J-0R0A	RESISTOR
	R165	NRSA63J-221N	RESISTOR
	R166	NRSA63J-821N	RESISTOR
	R167	NRSA63J-103N	RESISTOR
	R168	NRSA63J-103N	RESISTOR
	R169	NRSA63J-102N	RESISTOR
	R174	NRSA63J-182N	RESISTOR
	R175	NRSA63J-152N	RESISTOR
	R176	NRSA63J-0R0A	RESISTOR
	R177	NRSA63J-0R0A	RESISTOR
	R178	NRSA63J-102N	RESISTOR
	R180	NRSA63J-561N	RESISTOR
	R181	NRSA63J-182N	RESISTOR
	R182	NRSA63J-223N	RESISTOR
	R183	NRSA63J-473N	RESISTOR
	R184	NRSA63J-472N	RESISTOR
	R185	NRSA63J-472N	RESISTOR
	R186	NRSA63J-681N	RESISTOR
	R187	NRSA63J-221N	RESISTOR
	R188	NRSA63J-102N	RESISTOR
	R189	NRSA63J-333N	RESISTOR
	R190	NRSA63J-123N	RESISTOR
	R191	NRSA63J-472N	RESISTOR
	R192	NRSA63J-272N	RESISTOR
	R193	NRSA63J-473N	RESISTOR
	R194	NRSA63J-103N	RESISTOR
	R195	NRSA63J-104N	RESISTOR
	R197	NRSA63J-472N	RESISTOR
	R198	NRSA63J-472N	RESISTOR
	R199	NRSA63J-102N	RESISTOR
	R200	NRSA63J-102N	RESISTOR
	R201	NRSA63J-682N	RESISTOR
	R202	NRSA63J-682N	RESISTOR
	R203	NRSA63J-153N	RESISTOR
	R204	NRSA63J-102N	RESISTOR
	R205	NRSA63J-154N	RESISTOR
	R208	NRSA63J-152N	RESISTOR
	R305	NVP1301-102N	V RESISTOR, E-E Y LEVEL
	R309	NVP1301-473N	V RESISTOR, PB DEM LEVEL
	R312	NVP1301-473N	V RESISTOR, DARK CLIP
	R313	NVP1301-473N	V RESISTOR, WHITE CLIP
	R314	NVP1301-473N	V RESISTOR, E-E Y LEVEL
	R317	NVP1301-102N	V RESISTOR, PB Y LEVEL
	R320	NVP1301-681N	V RESISTOR, LP REC COLOR LEVEL
	R321	NVP1301-681N	V RESISTOR, SP REC COLOR LEVEL
	R322	NVP1301-332N	V RESISTOR, PB BURST LEVEL
	R323	NVP1301-102N	V RESISTOR, E-E COLOR LEVEL

#,⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R324	NVP1301-332N	V RESISTOR, RF EQ
	R325	NVP1301-332N	V RESISTOR, RF EQ
	R327	NVP1301-681N	V RESISTOR, LP REC FM LEVEL
	R330	NVP1301-222N	V RESISTOR, VIDEO NOISE CANCEL
	R331	NVP1301-153N	V RESISTOR, CARRIER
	R332	NVP1301-103N	V RESISTOR, DEVIATION
	R351	NVP1301-473N	V RESISTOR, S JUMP
	R352	NVP1301-103N	V RESISTOR, 0.5H VIDEO
	R382	NVP1301-681N	V RESISTOR, SP REC FM LEVEL
	R383	NVP1301-474N	V RESISTOR, VIDEO OUT
	C1	NCB31EK-103A	CAPACITOR
	C2	NCS31HJ-330A	CAPACITOR
	C3	NCS31HJ-220A	CAPACITOR
	C4	NCB31EK-103A	CAPACITOR
	C5	NCB31EK-103A	CAPACITOR
	C6	NCS31HJ-270A	CAPACITOR
	C7	NCS31HJ-121A	CAPACITOR
	C8	NCS31HJ-220A	CAPACITOR
	C9	NCB31EK-103A	CAPACITOR
	C10	NCB31EK-103A	CAPACITOR
	C11	NCB31EK-103A	CAPACITOR
	C12	NCB31EK-103A	CAPACITOR
	C13	NCB31EK-103A	CAPACITOR
	C15	NRSA63J-0R0A	RESISTOR
	C16	NCB31EK-103A	CAPACITOR
	C17	NCB31EK-103A	CAPACITOR
	C19	NCB31EK-103A	CAPACITOR
	C20	NRSA63J-0R0A	RESISTOR
	C21	NCB31EK-103A	CAPACITOR
	C23	ECEV0JV220R	E CAPACITOR
	C24	NCS31HJ-121A	CAPACITOR
	C27	NCS31HJ-180A	CAPACITOR
	C28	NCB31EK-103A	CAPACITOR
	C29	NCB31EK-103A	CAPACITOR
	C31	NCS31HJ-120A	CAPACITOR
	C33	NCS31HJ-151A	CAPACITOR
	C34	NCS31HJ-330A	CAPACITOR
	C35	NCB31EK-103A	CAPACITOR
	C40	QEF80JM-476	TANTAL CAPACITOR
	C41	QCYA1HK-103	CAPACITOR
	C42	NCS31HJ-270A	CAPACITOR
	C43	NCB31EK-103A	CAPACITOR
	C44	NCT06CH-390A	CAPACITOR
	C45	NCS31HJ-151A	CAPACITOR
	C46	NCS31HJ-5R0A	CAPACITOR
	C47	ECEV1HV2R2R	E CAPACITOR
	C48	NCS31HJ-181A	CAPACITOR
	C49	NCB31HK-391A	CAPACITOR
	C50	NCB31HK-471A	CAPACITOR
	C51	NCS31HJ-151A	CAPACITOR
	C52	NCB31EK-103A	CAPACITOR
	C53	QCFA1EZ-104	CAPACITOR
	C56	QEF81CM-105	TANTAL CAPACITOR
	C57	NCS31HJ-680A	CAPACITOR
	C58	NCB31EK-103A	CAPACITOR
	C59	ECEV1HV3R3R	E CAPACITOR
	C60	ECEV1HV2R2R	E CAPACITOR
	C61	ECEV1EV4R7R	E CAPACITOR
	C62	ECEV1EV4R7R	E CAPACITOR
	C63	NCB31EK-103A	CAPACITOR
	C64	NCB31HK-222A	CAPACITOR
	C65	QEF80JM-225	TANTAL CAPACITOR
	C66	QCYA1HK-103	CAPACITOR
	C67	QEE80JM-226	TANTAL CAPACITOR
	C68	NCB31EK-103A	CAPACITOR
	C69	NCS31HJ-820A	CAPACITOR
	C70	QCSA1HJ-561	CAPACITOR
	C71	NCT06CH-181A	CAPACITOR
	C72	QCYA1HK-122	CAPACITOR
	C73	QCYA1HK-122	CAPACITOR
	C74	QEF81AM-105	TANTAL CAPACITOR
	C75	NCB31EK-103A	CAPACITOR
	C76	PU59913-473K	CAPACITOR
	C77	QEF81AM-105	TANTAL CAPACITOR
	C78	QEF81AM-105	TANTAL CAPACITOR
	C79	NCT06CH-270A	CAPACITOR
	C80	NCS31HJ-270A	CAPACITOR
	C81	QCTA1CH-270	CAPACITOR
	C82	NCT06CH-470A	CAPACITOR
	C83	NCB31EK-103A	CAPACITOR
	C84	NCB31EK-103A	CAPACITOR
	C85	NCB31EK-103A	CAPACITOR
	C86	NCS31HJ-390A	CAPACITOR
	C87	NCB31EK-103A	CAPACITOR
	C88	NCS31HJ-120A	CAPACITOR
	C89	NCB31EK-103A	CAPACITOR
	C90	NCB31EK-103A	CAPACITOR
	C91	QCYA1EK-223	CAPACITOR
	C95	QCYA1HK-103	CAPACITOR
	C96	QCYA1HK-103	CAPACITOR
	C97	QCYA1HK-103	CAPACITOR
	C98	QCYA1HK-103	CAPACITOR
	C99	QEE80JM-226	TANTAL CAPACITOR
	C100	NCB31EK-103A	CAPACITOR
	C103	NCB31EK-103A	CAPACITOR
	C104	ECEV1CV100R	E CAPACITOR
	C105	NCB31EK-103A	CAPACITOR
	C106	QCYA1EK-223	CAPACITOR
	C107	ECEV1HV0R1R	E CAPACITOR
	C108	QCYA1EK-223	CAPACITOR
	C109	PU59913-473K	CAPACITOR
	C110	QCYA1HK-103	CAPACITOR
	C111	QCYA1HK-103	CAPACITOR
	C112	QCYA1HK-103	CAPACITOR
	C113	NCB31EK-103A	CAPACITOR
	C114	NCB31EK-103A	CAPACITOR
	C115	NCB31EK-103A	CAPACITOR
	C116	NCB31EK-103A	CAPACITOR
	C117	NCS31HJ-331A	CAPACITOR
	C118	NCB31EK-103A	CAPACITOR
	C119	NCB31EK-103A	CAPACITOR
	C120	NCB31EK-103A	CAPACITOR
	C121	NCB31EK-103A	CAPACITOR
	C122	ECEV0JV220R	E CAPACITOR
	C123	NCB31EK-103A	CAPACITOR
	C124	QCYA1EK-223	CAPACITOR
	C125	QCYA1EK-223	CAPACITOR
	C126	NCB31EK-103A	CAPACITOR
	C127	NCB31EK-103A	CAPACITOR
	C128	QEF81VM-224	TANTAL CAPACITOR
	C129	ECEV1CV100R	E CAPACITOR
	C130	NCS31HJ-220A	CAPACITOR
	C131	NCT06CH-270A	CAPACITOR
	C132	NCS31HJ-330A	CAPACITOR
	C133	QEF81VM-105	TANTAL CAPACITOR
	C134	NCB31EK-103A	CAPACITOR
	C135	QEF81AM-475	TANTAL CAPACITOR

#,⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C136	QEF81VM-154	TANTAL CAPACITOR
	C137	QCYA1HK-103	CAPACITOR
	C138	NCB31EK-103A	CAPACITOR
	C139	NCB31EK-103A	CAPACITOR
	C140	ECEV0JV220R	E CAPACITOR
	C141	ECEV0JV220R	E CAPACITOR
	C142	QCYA1EK-223	CAPACITOR
	C143	QCYA1EK-223	CAPACITOR
	C144	QEF81CM-105	TANTAL CAPACITOR
	C145	QCYA1EK-223	CAPACITOR
	C146	NCB31EK-103A	CAPACITOR
	C147	NCB31HK-152A	CAPACITOR
	C148	QEF81CM-105	TANTAL CAPACITOR
	C149	ECEV0JV220R	E CAPACITOR
	C150	ECEV1CV100R	E CAPACITOR
	C151	NCB31EK-103A	CAPACITOR
	C152	NCB31EK-103A	CAPACITOR
	C153	QCYA1HK-273	CAPACITOR
	C154	NCB31HK-222A	CAPACITOR
	C155	NCB31HK-332A	CAPACITOR
	C156	NCS31HJ-331A	CAPACITOR
	C157	QEF81CM-105	TANTAL CAPACITOR
	C158	QEF81CM-105	TANTAL CAPACITOR
	C159	QCYA1EK-223	CAPACITOR
	C160	QEK41AM-107	E CAPACITOR
	C161	QCYA1EK-223	CAPACITOR
	C162	ECEV1HV010R	E CAPACITOR
	C163	ECEV1HV010R	E CAPACITOR
	C164	NCS31HJ-331A	CAPACITOR
	C165	NCS31HJ-680A	CAPACITOR
	C166	QEF81AM-105	TANTAL CAPACITOR
	C167	QEF81AM-105	TANTAL CAPACITOR
	C168	NCS31HJ-680A	CAPACITOR
	C169	NCS31HJ-331A	CAPACITOR
	C170	NCB31EK-103A	CAPACITOR
	C171	ECEV0JV220R	E CAPACITOR
	C172	QEF81AM-105	TANTAL CAPACITOR
	C173	QEF81AM-105	TANTAL CAPACITOR
	C174	NCB31EK-103A	CAPACITOR
	C175	NCB31EK-103A	CAPACITOR
	C176	QCYA1EK-223	CAPACITOR
	C177	NEH11HM-225NZ	CAPACITOR
	C178	NCB31EK-103A	CAPACITOR
	C179	ECEV1CV100R	E CAPACITOR
	C180	ECEV1EV4R7R	E CAPACITOR
	C182	QEKA0HM-477	E CAPACITOR
	C183	QEKA0HM-477	E CAPACITOR
	C184	ECEV1CV100R	E CAPACITOR
	C185	QEF80JM-476	TANTAL CAPACITOR
	C188	NCB31EK-103A	CAPACITOR
	C189	NCS31HJ-330A	CAPACITOR
	C191	NCS31HJ-150A	CAPACITOR
	C192	NCS31HJ-5R0A	CAPACITOR
	C199	NCS31HJ-180A	CAPACITOR
	C200	NCS31HJ-121A	CAPACITOR
	C201	NCS31HJ-9R0A	CAPACITOR
	C202	QCYA1HK-103	CAPACITOR
	C203	NCB31EK-103A	CAPACITOR
	C204	ECEV0JV220R	E CAPACITOR
	C206	QCYA1EK-223	CAPACITOR
	C207	NCB31EK-103A	CAPACITOR
	C208	QCYA1HK-103	CAPACITOR
	C209	NEN11HM-105NZ	E CAPACITOR
	C211	QEF80JM-476	TANTAL CAPACITOR
	C212	NCB31EK-103A	CAPACITOR
	C213	NCS31HJ-120A	CAPACITOR

#,⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C214	NCS31HJ-120A	CAPACITOR
	C215	NCB31EK-103A	CAPACITOR
	C216	ECEV1CV100R	E CAPACITOR
	C217	NRSA63J-0R0A	RESISTOR
	C218	QCTA1HG-120	CAPACITOR
	C219	QCTA1HG-820	CAPACITOR
	C220	QCYA1HK-103	CAPACITOR
	C221	QEF80JM-476	E CAPACITOR
	C222	NCS31HJ-181A	CAPACITOR
	C223	ECEV1CV100R	E CAPACITOR
	C224	NCS31HJ-151A	CAPACITOR
	C225	NCS31HJ-680A	CAPACITOR
	C227	NEH11HM-225NZ	CAPACITOR
	C228	NEH10GM-336NZ	E CAPACITOR
	L1	YU40248-470KY	COIL
	L4	YU40249-470JY	COIL
	OR	PU58201-470J	COIL
	L5	YU40249-220JY	COIL
	OR	PU58201-220J	COIL
	L6	YU40249-680JY	COIL
	OR	PU58201-680J	COIL
	L7	YU40249-560JY	COIL
	OR	PU58201-560J	COIL
	L8	YU40249-560JY	COIL
	OR	PU58201-560J	COIL
	L9	YU40249-820JY	COIL
	L10	YU40249-121JY	COIL
	OR	PU58201-121J	COIL
	L11	YU40249-330JY	COIL
	OR	PU58201-330J	COIL
	L12	YU40249-220JY	COIL
	OR	PU58201-220J	COIL
	L13	YU40249-470JY	COIL
	OR	PU58201-470J	COIL
	L14	YU40248-470KY	COIL
	L15	YU40249-220JY	COIL
	L16	YU40249-121JY	COIL
	OR	PU58201-121J	COIL
	L17	YU40249-120JY	COIL
	OR	PU58201-120J	COIL
	L18	YU40249-120JY	COIL
	OR	PU58201-120J	COIL
	L21	YU40249-560JY	COIL
	OR	PU58201-560J	COIL
	L22	YU40249-120JY	COIL
	OR	PU58201-120J	COIL
	L23	YU40249-120JY	COIL
	OR	PU58201-120J	COIL
	L24	YU40248-470KY	COIL
	L25	YU40248-470KY	COIL
	L26	YU40248-470KY	COIL
	L27	YU40249-560JY	COIL
	OR	PU58201-560J	COIL
	L28	YU40249-560JY	COIL
	OR	PU58201-560J	COIL
	L29	YU40248-470KY	COIL
	L30	YU40249-220JY	COIL
	OR	PU58201-220J	COIL
	L31	YU40249-270JY	COIL
	L32	YU40249-270JY	COIL
	L33	YU40249-220JY	COIL
	OR	PU58201-220J	COIL
	L34	YU40248-470KY	COIL
	L35	YU40248-470KY	COIL
	L36	YU40248-470KY	COIL
	L37	YU40248-470KY	COIL
	L38	YU40248-470KY	COIL
	L39	YU40248-470KY	COIL
	L40	YU40249-121JY	COIL

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	OR	PU58201-121J	COIL
	L42	YU40249-220JY	COIL
	L43	YU40248-470KY	COIL
	L44	YU40249-121JY	COIL
	OR	PU58201-121J	COIL
	L45	YU40248-470KY	COIL
	L46	YU40249-220JY	COIL
	OR	PU58201-220J	COIL
	L48	YU40249-100JY	COIL
	L49	YU40249-100JY	COIL
	L51	YU40484	V. COIL, 4.3 BELL
	L52	YU40485	V. COIL, 1.1 BELL
	L53	YU40248-470KY	PEAKING COIL
	L54	YU40249-101JY	PEAKING COIL
	L55	YU40249-680JY	PEAKING COIL
	L56	YU40249-680JY	COIL
	L57	YU40249-151JY	COIL
	L58	QRS188J-0R0Y	COIL
	L59	QRS188J-0R0Y	COIL
	L60	YU40248-470KY	COIL
	EQ1	PU59672	EQUALIZER
	EQ2	PU59031	EQUALIZER
	LPF1	PU59666	LOW PASS FILTER
	BPF1	PU59668	BAND PASS FILTER
	BPF2	PU59669	BAND PASS FILTER
	BPF3	PU59670	BAND PASS FILTER
	HPF1	PU59671-2	HIGH PASS FILTER
	DL1	PU59472	DELAY LINE
	DL2	YU40289	DELAY LINE
⚠	X1	PU59642	CRYSTAL RESONATOR
	TP6	PU56278	TEST PIN
	TP8	PU56278	TEST PIN
	TP13	PU56278	TEST PIN
	TP15	PU56278	TEST PIN
	TP16	PU56278	TEST PIN
	TP19	PU56278	TEST PIN
	TP20	PU56278	TEST PIN
	TP21	PU56278	TEST PIN
	TP31	PU56278	TEST PIN
	TP32	PU56278	TEST PIN
	TP33	PU56278	TEST PIN
	TP34	PU56278	TEST PIN
	TP35	PU56278	TEST PIN
	TP36	PU56278	TEST PIN
	TP37	PU56278	TEST PIN
	TP38	PU56278	TEST PIN
	TP39	PU56278	TEST PIN
	TP41	PU56278	TEST PIN
	TP42	PU56278	TEST PIN
	TP43	PU56278	TEST PIN
	CN1	YU40105-20	B/B HOUSING-DS
	CN2	YU40105-10	B/B HOUSING-DS
	CN3	YU40105-8	B/B HOUSING-DS
	CN8	YU40096-2	W/B CN.WFR R/A

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8. DRUM MDA BOARD ASSEMBLY <03>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20021A-01-C	DRUM MDA BOARD ASSEMBLY
	IC251	BA6452F	IC
	D251	MA141WA	DIODE
	R251	NRSA63J-102N	RESISTOR
	R252	NRSA63J-104N	RESISTOR
	R253	NRSA63J-153N	RESISTOR
	R254	NRSA63J-222N	RESISTOR
	R255	NRSA63J-101N	RESISTOR
	R256	NRSA63K-2R2N	RESISTOR
	R257	NRSA63K-2R2N	RESISTOR
	R258	NRSA63K-2R2N	RESISTOR
	R259	QRG125J-R68AR	MF RESISTOR
	R260	NRSA63J-104N	RESISTOR
	R261	NRSA63J-0R0A	RESISTOR
	C251	QCY81EK-104	CAPACITOR
	C252	NCB31HK-471A	CAPACITOR
	C253	QCY81CK-224	CAPACITOR
	C254	QCFA1EZ-104	CAPACITOR
	C255	QER41CM-106ZE	E CAPACITOR
	C256	QCYA1EK-223	CAPACITOR
	C257	QER41CM-106ZE	E CAPACITOR
	C258	QER41CM-106ZE	E CAPACITOR
	C259	QER41CM-106ZE	E CAPACITOR
	C260	QCY81EK-104	CAPACITOR
	C261	QER41CM-106ZE	E CAPACITOR
	SW251	YU40177	CASSETTE LOCK SW
	CN251	YU40096-2	CAP HOUSING
	CN252	YU40107-16	FPC CONNECTOR
	CN253	YU40096-2Y	CAP HOUSING
	CN254	YU40105-14	CAP HOUSING,(BOARD TO BOARD)

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9. MIC JACK BOARD ASSEMBLY <05>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20026C1	MIC JACK BOARD ASSY
	J1	YU40407	MIC JACK
	CN1	YU40096-3	CAP HOUSING

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10. JACK BOARD ASSEMBLY <06>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20026C2	JACK BOARD ASSY
	D1	RD5.6EB2	ZENER DIODE
	D2	RD9.1ESB2	ZENER DIODE
	R3,R4	QRD161J-750	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R5	QRD161J-101	RESISTOR
	R6	QRD161J-102	RESISTOR
	FW1	YU40206-308	FLAT WIRE1
	FW2	YU40206-30A	FLAT WIRE2
	J1	YU40273-2	JACK BOX(B)

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11. TRIGGER BOARD ASSEMBLY <07>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB2002603	TRIGGER BOARD ASSY
	D1	ERA81-004	DIODE
	R1	QRD161J-683	RESISTOR
	SW1	PU59843	TRIGGER SW
	SW2	YU40171	SWITCH(SLIDE),ALARM
⚠	HD1	YU40170	FUSE CLIP,X2
	SPC1	YQ40478	SPACER
	WR1	YU40417	LUG WIRE ASS'Y
	CN1	YU40096-3	CAP HOUSING
	CN2	YU40096-4	CAP HOUSING
	CN3	YU40096-2	CAP HOUSING
⚠	F1	QMF51E2-3R15	FUSE,NOT INCL,TRIG BOARD ASSY

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12. SENSOR BOARD <08>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB	YU40199-01-02	SENSOR BOARD

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13. RELAY DRIVE BOARD ASSEMBLY <15>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20038A	RELAY DRIVE BOARD ASSY
	IC1	BU4011BF	IC
	IC2	UPD4538BG	IC
	IC3	S8054HN	IC
	R1	NRSA63J-104N	RESISTOR
	R2	NRSA63J-224N	RESISTOR
	R3	NRSA63J-104N	RESISTOR
	R4	NRSA63J-103N	RESISTOR
	C1	QCF81EZ-224ZL	CAPACITOR
	C2	QCFA1EZ-104	CAPACITOR
	C3	QCFA1EZ-104	CAPACITOR
	C4	QCF81CZ-105	CAPACITOR
		OR PU59758-105	CAPACITOR
	HD1	YQ40552	HOLDER(R.D.PWB)
	SCW1	SPSH1720M	SCREW
	CN1	YU40096-3	W/B CN.WFR R/A
	CN2	YU40096-4	W/B CN.WFR R/A

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14. VIDEO-1 BOARD ASSEMBLY <21>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20062B-C	VIDEO-1 BOARD ASSY
	IC2	CP1088G	IC
	IC3	MC8089A	IC
	IC4	UPC2370GH	IC
	IC5	MSM6855	IC
	IC9	THE225A	IC
	Q1	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q2	2SD1819(RS)	TRANSISTOR
	Q3	2SC4098(PQ)	TRANSISTOR
		OR 2SC3936(BC)	TRANSISTOR
	Q4	2SB1218(RS)	TRANSISTOR
	Q8	2SD1819(RS)	TRANSISTOR
	Q12	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q13	2SA1532(BC)	TRANSISTOR
		OR 2SA1576(QR)	TRANSISTOR
	Q14	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q15	2SA1532(BC)	TRANSISTOR
		OR 2SA1576(QR)	TRANSISTOR
	Q16	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q17	2SC3936(BC)	TRANSISTOR
		OR 2SC4098(PQ)	TRANSISTOR
	Q18	2SC4098(PQ)	TRANSISTOR
		OR 2SC3936(BC)	TRANSISTOR
	Q29	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q30	2SC3936(BC)	TRANSISTOR
		OR 2SC4098(PQ)	TRANSISTOR
	Q31	2SC4098(PQ)	TRANSISTOR
		OR 2SC3936(BC)	TRANSISTOR
	Q32	2SA1532(BC)	TRANSISTOR
		OR 2SA1576(QR)	TRANSISTOR
	Q33	2SC3931(CD)	TRANSISTOR
	Q34	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q35	2SA1532(BC)	TRANSISTOR
		OR 2SA1576(QR)	TRANSISTOR
	Q40	2SC4098(PQ)	TRANSISTOR
		OR 2SC3936(BC)	TRANSISTOR
	D1	MA143	DIODE
	D2	MA141WA	DIODE
	D3	MA141WA	DIODE
	R2	NRSA63J-332N	RESISTOR
	R3	NRSA63J-122N	RESISTOR
	R4	NRSA63J-182N	RESISTOR
	R5	NRSA63J-105N	RESISTOR
	R7	NRSA63J-102N	RESISTOR
	R8	NRSA63J-512N	RESISTOR
	R9	NRSA63J-102N	RESISTOR
	R10	NRSA63J-102N	RESISTOR
	R11	NRSA63J-393N	RESISTOR
	R12	NRSA63J-683N	RESISTOR
	R16	NRSA63J-562N	RESISTOR
	R17	NRSA63J-102N	RESISTOR
	R18	NRSA63J-330N	RESISTOR
	R19	NRSA63J-151N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R20	NRSA63J-151N	RESISTOR
	R21	NRSA63J-303N	RESISTOR
	R22	NRSA63J-333N	RESISTOR
	R23	NRSA63J-332N	RESISTOR
	R24	NRSA63J-220N	RESISTOR
	R25	NRSA63J-104N	RESISTOR
	R26	NRSA63J-472N	RESISTOR
	R27	NRSA63J-104N	RESISTOR
	R28	NRSA63J-912N	RESISTOR
	R29	NVP1301-104N	V RESISTOR, BLOOMING
	R30	NRSA63J-183N	RESISTOR
	R31	NVP1301-223N	V RESISTOR, OB LEVEL
	R33	NRSA63J-184N	RESISTOR
	R34	NRSA63J-0R0A	RESISTOR
	R35	NRSA63J-0R0A	RESISTOR
	R36	NRSA63J-302N	RESISTOR
	R38	NRSA63J-0R0A	RESISTOR
	R40	NRSA63J-473N	RESISTOR
	R41	NVP1301-223N	V RESISTOR, AGC
	R42	NRSA63J-223N	RESISTOR
	R43	NRSA63J-333N	RESISTOR
	R44	NRSA63J-123N	RESISTOR
	R45	NRSA63J-103N	RESISTOR
	R46	NRSA63J-473N	RESISTOR
	R47	NRSA63J-563N	RESISTOR
	R48	NRSA63J-102N	RESISTOR
	R49	NVP1301-103N	V RESISTOR, B SEPA
	R50	NRSA63J-102N	RESISTOR
	R52	NVP1301-103N	V RESISTOR, R SEPA
	R54	NVP1301-103N	V RESISTOR, R LEVEL
	R55	NRSA63J-102N	RESISTOR
	R56	NVP1301-103N	V RESISTOR, B LEVEL
	R57	NRSA63J-102N	RESISTOR
	R58	NVP1301-103N	V RESISTOR
	R60	NRSA63J-562N	RESISTOR
	R61	NRSA63J-222N	RESISTOR
	R62	NRSA63J-102N	RESISTOR
	R63	NRSA63J-102N	RESISTOR
	R64	NRSA63J-102N	RESISTOR
	R65	NRSA63J-102N	RESISTOR
	R66	NVP1301-103N	V RESISTOR, YH SET UP
	R67	NVP1301-103N	V RESISTOR, YL SET UP
	R68	NVP1301-103N	V RESISTOR, R SET UP
	R69	NRSA63J-183N	RESISTOR
	R70	NRSA63J-243N	RESISTOR
	R71	NRSA63G-273N	RESISTOR
	R72	NRSA63G-393N	RESISTOR
	R73	NRSA63J-102N	RESISTOR
	R74	NRSA63J-122N	RESISTOR
	R75	NRSA63J-332N	RESISTOR
	R76	NRSA63J-102N	RESISTOR
	R77	NRSA63J-102N	RESISTOR
	R78	NRSA63J-562N	RESISTOR
	R79	NRSA63J-103N	RESISTOR
	R80	NRSA63J-102N	RESISTOR
	R81	NRSA63J-102N	RESISTOR
	R83	NVP1301-471N	V RESISTOR, YH BALANCE
	R84	NRSA63J-102N	RESISTOR
	R86	NRSA63J-103N	RESISTOR
	R87	NRSA63J-103N	RESISTOR
	R90	NRSA63J-105N	RESISTOR
	R91	NRSA63J-561N	RESISTOR
	R104	NRSA63J-121N	RESISTOR
	R105	NRSA63J-270N	RESISTOR
	R106	NRSA63J-270N	RESISTOR
	R107	NRSA63J-102N	RESISTOR
	R108	NRSA63J-102N	RESISTOR
	R109	NRSA63J-332N	RESISTOR
	R110	NVP1301-103N	V RESISTOR, B SET UP
	R111	NRSA63J-102N	RESISTOR
	R116	NRSA63J-472N	RESISTOR
	R117	NRSA63J-102N	RESISTOR
	R118	NRSA63J-102N	RESISTOR
	R119	NVP1301-472N	V RESISTOR, V EDGE 2H
	R120	NRSA63J-681N	RESISTOR
	R121	NRSA63J-331N	RESISTOR
	R122	NRSA63J-331N	RESISTOR
	R123	NVP1301-222N	V RESISTOR, V EDGE 1H
	R124	NRSA63J-102N	RESISTOR
	R125	NRSA63J-751N	RESISTOR
	R126	NRSA63J-222N	RESISTOR
	R127	NRSA63J-122N	RESISTOR
	R128	NRSA63J-271N	RESISTOR
	R129	NRSA63J-222N	RESISTOR
	R141	NRSA63J-105N	RESISTOR
	R143	NRSA63J-102N	RESISTOR
	R144	NVP1301-103N	V RESISTOR, B-Y GAIN
	R145	NRSA63J-102N	RESISTOR
	R146	NRSA63J-102N	RESISTOR
	R147	NVP1301-103N	V RESISTOR, YH GAIN
	R148	NRSA63J-102N	RESISTOR
	R149	NRSA63J-102N	RESISTOR
	R150	NRSA63J-0R0A	RESISTOR
	B6	NRSA63J-0R0A	RESISTOR
	B8	NRSA63J-0R0A	RESISTOR
	C1	NCT07CH-220A	CAPACITOR
	C2	NCT07CH-220A	CAPACITOR
	C3	NCB31EK-103A	CAPACITOR
	C4	ECEV0JV220R	E CAPACITOR
		OR NEH10JM-226NZ	E CAPACITOR
	C5	PU56247B-200	TRIMMER CAPACITOR, CLOCK OSC
		OR PU59867-200X	TRIMMER CAPACITOR
	C6	NCT07CH-5R0A	CAP
	C7	NCT07CH-150A	CAPACITOR
	C8	NCB31EK-103A	CAPACITOR
	C9	NCB31EK-103A	CAPACITOR
	C10	ECEV0JV101P	E CAPACITOR
		OR NEH10JM-107NP	E CAPACITOR
	C12	NCT07CH-220A	CAPACITOR
	C14	NCB31EK-103A	CAPACITOR
	C15	ECEV0JV220R	E CAPACITOR
		OR NEH10JM-226NZ	E CAPACITOR
	C16	NCB31EK-103A	CAPACITOR
	C18	NCB31EK-103A	CAPACITOR
	C19	ECEV1CV100R	E CAPACITOR
		OR NEH11CM-106NZ	E CAPACITOR
	C20	NCB31EK-103A	CAPACITOR
	C21	ECEV1CV100R	E CAPACITOR
		OR NEH11CM-106NZ	E CAPACITOR
	C22	NCT07CH-150A	CAPACITOR
	C26	NCB31EK-103A	CAPACITOR
	C27	ECEV1CV470P	E CAPACITOR
	C28	NCB31EK-103A	CAPACITOR
	C29	NCB31EK-103A	CAPACITOR
	C30	NCB31EK-103A	CAPACITOR
	C31	ECEV1CV470P	E CAPACITOR
	C32	NCB31EK-103A	CAPACITOR
	C33	ECEV1CV100R	E CAPACITOR
		OR NEH11CM-106NZ	E CAPACITOR
	C34	NCB31EK-103A	CAPACITOR
	C35	NCB31EK-103A	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C36	NCB31EK-103A	CAPACITOR
	C37	ECEV1EV4R7R	E CAPACITOR
	C38	NCB31EK-103A	CAPACITOR
	C39	NCB31EK-103A	CAPACITOR
	C40	ECEV1EV4R7R	E CAPACITOR
	C41	NCB31EK-103A	CAPACITOR
	C43	YU40265-3	E CAPACITOR
	C45	QEF81CM-105	TANTAL CAPACITOR
	C48	QEE81AM-226	TANTAL CAPACITOR
	C49	YU40265-3	E CAPACITOR
	C50	QEE80JM-226	TANTAL CAPACITOR
	C52	ECEV0JV220R	E CAPACITOR
	OR	NEH10JM-226NZ	E CAPACITOR
	C53	QEF81CM-105	TANTAL CAPACITOR
	C54	PU59758-105	CAPACITOR
	OR	QCF81CZ-105	CAPACITOR
	C55	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C56	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C57	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C58	PU59758-105	CAPACITOR
	OR	QCF81CZ-105	CAPACITOR
	C59	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C60	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C61	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C62	PU59758-105	CAPACITOR
	OR	QCF81CZ-105	CAPACITOR
	C63	QCY81EK-473	CAPACITOR
	C64	QCY81EK-473	CAPACITOR
	C65	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C66	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C67	QCY81EK-473	CAPACITOR
	C68	QCY81EK-473	CAPACITOR
	C69	ECEV1CV100R	E CAPACITOR
	C71	QEF81AM-226	TANTAL CAPACITOR
	C72	NCB31EK-103A	CAPACITOR
	C74	NCB31EK-103A	CAPACITOR
	C75	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C76	NCB31EK-103A	CAPACITOR
	C77	ECEV0JV220R	E CAPACITOR
	C80	YU40265-1	E CAPACITOR
	C81	NCB31EK-103A	CAPACITOR
	C91	QEF81AM-475	TANTAL CAPACITOR
	C92	QEF81VM-334	TANTAL CAPACITOR
	C94	QEF81VM-334	TANTAL CAPACITOR
	C95	QEF81AM-475	TANTAL CAPACITOR
	C96	NCB31EK-103A	CAPACITOR
	C97	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C98	NCB31EK-103A	CAPACITOR
	C99	QEF81AM-475	TANTAL CAPACITOR
	C100	NCB31EK-103A	CAPACITOR
	C101	ECEV0JV220R	E CAPACITOR
	OR	NEH10JM-226NZ	E CAPACITOR
	C102	NCB31EK-103A	CAPACITOR
	C103	ECEV1CV100R	E CAPACITOR
	C104	NCB31EK-103A	CAPACITOR
	C121	ECEV1EV4R7R	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L101	YU40248-220KY	COIL
	L102	YU40248-220KY	COIL
	L103	PU58201-120K	COIL
	L105	YU40248-220KY	COIL
	L106	YU40248-220KY	COIL
	L107	PU58201-120K	COIL
	L108	PU58201-101K	COIL
	L111	YU40248-220KY	COIL
	L112	YU40248-220KY	COIL
	L115	YU40248-220KY	COIL
	L116	YU40248-220KY	COIL
	L117	YU40248-220KY	COIL
	EQ101	YU40526	EQUALIZER
	LPF103	YU40525	LOW PASS FILTER
	LPF104	YU40495	LOW PASS FILTER
	LPF105	YU40494	LOW PASS FILTER
	LPF106	YU40495	LOW PASS FILTER
⚠	X101	YU40524	CRYSTAL RESONATOR
	TRAP101	YU40453-Z	TRAP
	SLD1	YQ40538	SHEET
	SLD2	YU40554	INSULATER
	SPC1	PU59915-105	#500SPACER0.010
	TP101	PU59111-2	TEST PIN
	TP102	PU59111-2	TEST PIN
	TP103	PU59111-2	TEST PIN
	TP104	PU59111-2	TEST PIN
	TP105	PU59111-2	TEST PIN
	TP106	PU59111-2	TEST PIN
	TP107	PU59111-2	TEST PIN
	TP108	PU59111-2	TEST PIN
	TP109	PU59111-2	TEST PIN
	TP110	PU59111-2	TEST PIN
	TP112	PU59111-2	TEST PIN
	TP113	PU59111-2	TEST PIN
	TP114	PU59111-2	TEST PIN
	TP115	PU59111-2	TEST PIN
	TP116	PU59111-2	TEST PIN
	CN101	YU40101-12	BOARD TO BOARD
	CN102	YU40101-12	BOARD TO BOARD
	CN103	YU40101-20	BOARD TO BOARD
	CN105	YU40251-9	BOARD TO BOARD
	CN106	YU40251-13	BOARD TO BOARD

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15. VIDEO-2 BOARD ASSEMBLY <22>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20017U-01-C	VIDEO-2 BOARD ASSY
	IC201	UPC2371GH	IC
	IC202	MSM6985-2MS	IC
	IC203	MSM6985-2MS	IC
	Q201	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q203	2SC3936(BC)	TRANSISTOR
	OR	2SC4098(PQ)	TRANSISTOR
	Q204	2SA1576(QR)	TRANSISTOR
	OR	2SA1532(BC)	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q205	2SC3936(BC)	TRANSISTOR
		OR 2SC4098(PQ)	TRANSISTOR
	Q206	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q208	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q209	2SC3936(BC)	TRANSISTOR
		OR 2SC4098(PQ)	TRANSISTOR
	R201	NRSA63J-122N	RESISTOR
	R202	NRSA63J-222N	RESISTOR
	R203	NRSA63J-822N	RESISTOR
	R204	NRSA63J-333N	RESISTOR
	R205	NRSA63J-393N	RESISTOR
	R207	NRSA63J-333N	RESISTOR
	R208	NRSA63J-223N	RESISTOR
	R209	NRSA63J-183N	RESISTOR
	R210	NRSA63J-333N	RESISTOR
	R212	NRSA63J-333N	RESISTOR
	R214	NRSA63J-103N	RESISTOR
	R215	NRSA63J-333N	RESISTOR
	R216	NRSA63J-123N	RESISTOR
	R217	NRSA63J-102N	RESISTOR
	R218	NRSA63J-102N	RESISTOR
	R219	NRSA63J-102N	RESISTOR
	R220	NRSA63J-102N	RESISTOR
	R221	NRSA63J-273N	RESISTOR
	R222	NRSA63J-273N	RESISTOR
	R223	NRSA63J-333N	RESISTOR
	R224	NRSA63J-273N	RESISTOR
	R225	NRSA63J-102N	RESISTOR
	R226	NRSA63J-102N	RESISTOR
	R227	NRSA63J-102N	RESISTOR
	R228	NRSA63J-123N	RESISTOR
	R229	NVP1301-473N	V RESISTOR, CHROMA OFF SET
	R230	NRSA63J-242N	RESISTOR
	R232	NRSA63J-102N	RESISTOR
	R241	NRSA63J-152N	RESISTOR
	R242	NRSA63J-102N	RESISTOR
	R243	NRSA63J-102N	RESISTOR
	R244	NVP1301-103N	V RESISTOR, COLOR DIFF BAL
	R245	NRSA63J-152N	RESISTOR
	R246	NRSA63J-102N	RESISTOR
	R247	NRSA63J-102N	RESISTOR
	R248	NVP1301-103N	V RESISTOR, NOISE SUP
	R249	NRSA63J-222N	RESISTOR
	R250	NRSA63J-222N	RESISTOR
	C201	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C202	NCB31EK-103A	CAPACITOR
	C203	NCT07CH-150A	CAPACITOR
	C204	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C205	NCB31EK-103A	CAPACITOR
	C206	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C207	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C208	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C209	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C210	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C211	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C212	NCB31EK-103A	CAPACITOR
	C213	ECEV0JV220R	E CAPACITOR
	C214	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C215	QEF80GM-226	TANTAL CAPACITOR
	C221	NCB31EK-103A	CAPACITOR
	C222	NCB31EK-103A	CAPACITOR
	C223	QEF81AM-475	TANTAL CAPACITOR
	C224	QCFA1EZ-104	CAPACITOR
	C225	NCB31EK-103A	CAPACITOR
	C226	NCB31EK-103A	CAPACITOR
	C227	NCB31EK-103A	CAPACITOR
	C228	NCB31EK-103A	CAPACITOR
	C229	QEF81AM-475	TANTAL CAPACITOR
	C230	NCB31EK-103A	CAPACITOR
	C231	QCFA1EZ-104	CAPACITOR
	C232	NCB31EK-103A	CAPACITOR
	C233	ECEV0JV220R	E CAPACITOR
	C234	ECEV1CV100R	E CAPACITOR
	L201	PU58201-120K	COIL
	L203	PU58201-120K	COIL
	L204	PU58201-120K	COIL
	EQ201	YU40324	EQUALIZER
		OR YU40499	EQUALIZER
	EQ202	YU40324	EQUALIZER
	LPF201	PU59620-Z	LOW PASS FILTER
	LPF202	PU59620-Z	LOW PASS FILTER
	DL201	YU40323	DELAY LINE
	TP201	PU59111-2	TEST PIN
	TP202	PU59111-2	TEST PIN
	CN205	YU40252-9	BOARD TO BOARD
	CN206	YU40252-13	BOARD TO BOARD

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* 16. ENCODER BOARD ASSEMBLY <23> *

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PWBA	YB20055C-C	ENCODER BOARD ASSY
IC301	M51282FP	IC
IC302	THE257A	IC
IC303	MC8182B	IC
IC304	TC4S71F	IC
IC305	TC4S71F	IC
IC306	TC4S69F	IC
IC307	TC4S71F	IC
Q301	2SA1576(QR)	TRANSISTOR
	OR 2SA1532(BC)	TRANSISTOR
Q302	2SA1532(BC)	TRANSISTOR
	OR 2SA1576(QR)	TRANSISTOR
Q303	2SC3936(BC)	TRANSISTOR
	OR 2SC4098(PQ)	TRANSISTOR
Q304	2SC4098(PQ)	TRANSISTOR
	OR 2SC3936(BC)	TRANSISTOR
Q305	2SC3936(BC)	TRANSISTOR
	OR 2SC4098(PQ)	TRANSISTOR
Q306	2SC4098(PQ)	TRANSISTOR
	OR 2SC3936(BC)	TRANSISTOR
Q307	2SC3936(BC)	TRANSISTOR
	OR 2SC4098(PQ)	TRANSISTOR
Q308	2SC4098(PQ)	TRANSISTOR
	OR 2SC3936(BC)	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D301	RD7.5M-T2B2	ZENER DIODE
	D302	MA141WA	DIODE
	R301	NVP1301-103N	V RESISTOR, BURST LEVEL
	R302	NRSA63J-222N	RESISTOR
	R303	NRSA63J-102N	RESISTOR
	R304	NRSA63J-103N	RESISTOR
	R305	NRSA63J-102N	RESISTOR
	R306	NRSA63J-392N	RESISTOR
	R307	NRSA63J-102N	RESISTOR
	R308	NRSA63G-392N	RESISTOR
	R309	NRSA63G-682N	RESISTOR
	R310	NRSA63J-0R0A	RESISTOR
	R311	NVP1301-103N	V RESISTOR, W CLIP
	R312	NRSA63J-102N	RESISTOR
	R313	NRSA63J-242N	RESISTOR
	R314	NRSA63J-272N	RESISTOR
	R315	NRSA63J-222N	RESISTOR
	R316	NRSA63G-103N	RESISTOR
	R317	NRSA63G-103N	RESISTOR
	R319	NRSA63J-392N	RESISTOR
	R320	NRSA63J-102N	RESISTOR
	R321	NRSA63J-103N	RESISTOR
	R322	NRSA63J-103N	RESISTOR
	R323	NRSA63J-103N	RESISTOR
	R324	NRSA63J-103N	RESISTOR
	R325	NRSA63J-183N	RESISTOR
	R326	NRSA63J-102N	RESISTOR
	R327	NVP1301-103N	V RESISTOR, CHROMA GAIN
	R328	NRSA63J-102N	RESISTOR
	R329	NRSA63J-222N	RESISTOR
	R330	NRSA63J-102N	RESISTOR
	R331	NRSA63J-102N	RESISTOR
	R332	NRSA63J-102N	RESISTOR
	R333	NRSA63J-272N	RESISTOR
	R334	NRSA63J-102N	RESISTOR
	R335	NVP1301-103N	V RESISTOR, OFFSET LEVEL
	R336	NRSA63J-102N	RESISTOR
	R337	NRSA63J-392N	RESISTOR
	R338	NRSA63J-751N	RESISTOR
	R339	NRSA63J-0R0A	RESISTOR
	R340	NRSA63J-392N	RESISTOR
	R341	NRSA63J-102N	RESISTOR
	R342	NRSA63J-392N	RESISTOR
	R343	NRSA63J-102N	RESISTOR
	R346	NRSA63J-104N	RESISTOR
	R347	NRSA63J-222N	RESISTOR
	R348	NRSA63J-222N	RESISTOR
	R351	NRSA63J-682N	RESISTOR
	R352	NRSA63J-681N	RESISTOR
	R353	NRSA63J-272N	RESISTOR
	R354	NRSA63J-222N	RESISTOR
	R362	NRSA63J-222N	RESISTOR
	R363	NRSA63J-222N	RESISTOR
	C301	PU59758-105	CAPACITOR
	C302	ECEV1CV100R	E CAPACITOR
	C303	PU59913-473K	CAPACITOR
	C304	PU59913-473K	CAPACITOR
	C305	NCB31EK-103A	CAPACITOR
	C306	ECEV0JV220R	E CAPACITOR
	C307	ECEV0JV220R	E CAPACITOR
	C308	NCB31EK-103A	CAPACITOR
	C309	PU59913-473K	CAPACITOR
	C310	PU59913-473K	CAPACITOR
	C311	PU59913-473K	CAPACITOR
	C312	NCT07CH-220A	CAPACITOR
	C313	NCB31HK-561A	CAPACITOR
	C315	NCT07CH-680A	CAPACITOR
	C316	NCT07CH-680A	CAPACITOR
	C317	NCB31HK-222A	CAPACITOR
	C318	ECEV0JV220R	E CAPACITOR
	C319	NCB31EK-103A	CAPACITOR
	C320	QEF81EM-474	CAPACITOR
	C321	NCT07CH-150A	RESISTOR
	C322	NCT07CH-270A	CAPACITOR
	C323	NCT07CH-510A	CAPACITOR
	C324	NCB31EK-103A	CAPACITOR
	C325	QEF81VM-334	TANTAL CAPACITOR
	C326	NCT07CH-100A	CAPACITOR
	C327	NCB31EK-103A	CAPACITOR
	C328	ECEV0JV220R	E CAPACITOR
	C330	QEF81AM-106	TANTAL CAPACITOR
	C331	PU59913-473K	CAPACITOR
	C332	PU59913-473K	CAPACITOR
	C333	NCB31EK-103A	CAPACITOR
	C334	NCT07CH-101A	CAPACITOR
	C351	ECEV0JV220R	E CAPACITOR
	C352	ECEV0JV220R	E CAPACITOR
	C353	NCB31EK-103A	CAPACITOR
	C354	NCT07CH-101A	CAPACITOR
	C355	NCT07CH-220A	CAPACITOR
	C356	QED41AM-107R	E CAPACITOR
	C357	QED41CM-107R	E CAPACITOR
	L301	YU40248-220KY	COIL
	L302	YU40248-220KY	COIL
	L303	YU40248-220KY	COIL
	L304	YU40248-220KY	COIL
	TRAP1	YU40563-Z	TRAP
	DL301	PU60012	EQUALIZER
	TP301	PU59111-2	TEST PIN
	TP302	PU59111-2	TEST PIN
	TP303	PU59111-2	TEST PIN
	CN301	YU40105-12	CONNECTOR
	CN302	YU40105-12	CONNECTOR
	CN303	PU58655-10	CAP HOUSING
	CN304	YU40096-2Y	W/B CN.WFR R/A
	CN305	YU40096-4Y	W/B CN.WFR R/A
	CN306	PU58655-3	CAP HOUSING
	CN307	YU40096-2	W/B CN.WFR R/A
⚠	CP301	ICP-F20	CIRCUIT PROTECTOR
⚠	CP302	ICP-F10	CIRCUIT PROTECTOR

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17. INDICATOR BOARD ASSEMBLY <24>

PWBA	YB20019G-03-C	INDICATOR BOARD ASSY
IC401	VC2060	IC
IC402	VC2041	IC
OR	VC2041-W2	IC
IC403	M54641FP	IC
IC404	UPC324G2	IC
IC405	6VT08	IC

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q401	2SA1532(BC)	TRANSISTOR
	Q403	2SC3936(BC)	TRANSISTOR
	Q404	2SC3936(BC)	TRANSISTOR
	Q405	2SC3936(BC)	TRANSISTOR
	Q406	2SC3936(BC)	TRANSISTOR
	Q407	2SA1532(BC)	TRANSISTOR
	Q408	2SA1532(BC)	TRANSISTOR
	Q409	2SK198P,Q	TRANSISTOR
	Q410	2SC3936(BC)	TRANSISTOR
	Q411	2SA1532(BC)	TRANSISTOR
	Q412	2SA1532(BC)	TRANSISTOR
	Q413	2SA1532(BC)	TRANSISTOR
	D401	RD8.2MB2	ZENER DIODE
	D402	MA704	DIODE
	D403	MA141WK	DIODE
	D404	MA704	DIODE
	D405	MA184	DIODE
		OR MA185	DIODE
	R401	NRSA63J-122N	RESISTOR
	R402	PU58901-472	V RESISTOR,IND ADJ
	R404	NRSA63J-104N	RESISTOR
	R406	NRSA63J-104N	RESISTOR
	R407	NRSA63J-0R0A	RESISTOR
	R408	NRSA63J-104N	RESISTOR
	R409	NRSA63J-223N	RESISTOR
	R410	NRSA63J-101N	RESISTOR
	R411	NRSA63J-101N	RESISTOR
	R413	QRD161J-222	RESISTOR
	R415	NRSA63J-472N	RESISTOR
	R416	NRSA63J-472N	RESISTOR
	R417	NRSA63J-153N	RESISTOR
	R418	QRD161J-103	RESISTOR
	R420	NRSA63J-222N	RESISTOR
	R421	NRSA63J-222N	RESISTOR
	R422	NRSA63J-473N	RESISTOR
	R423	NRSA63J-682N	RESISTOR
	R424	NRSA63J-333N	RESISTOR
	R425	NRSA63J-103N	RESISTOR
	R426	NRSA63J-152N	RESISTOR
	R427	NRSA63J-222N	RESISTOR
	R428	NRSA63J-152N	RESISTOR
	R429	NRSA63J-472N	RESISTOR
	R430	NRSA63J-101N	RESISTOR
	R431	NRSA63J-472N	RESISTOR
	R432	NRSA63J-333N	RESISTOR
	R433	NRSA63J-223N	RESISTOR
	R434	NRSA63J-101N	RESISTOR
	R435	NRSA63J-333N	RESISTOR
	R436	NRSA63J-223N	RESISTOR
	R437	NRSA63J-473N	RESISTOR
	R438	NRSA63J-473N	RESISTOR
	R439	NRSA63J-122N	RESISTOR
	R440	NRSA63J-683N	RESISTOR
	R441	NRSA63J-682N	RESISTOR
	R442	NRSA63J-153N	RESISTOR
	R443	NRSA63J-222N	RESISTOR
	R445	NRSA63J-272N	RESISTOR
	R446	NVP1301-102N	V RESISTOR,IRIS ADJ
	R447	NRSA63J-222N	RESISTOR
	R448	NRSA63J-560N	RESISTOR
	R449	NRSA63J-273N	RESISTOR
	R450	NRSA63J-223N	RESISTOR
	R451	NRSA63J-473N	RESISTOR
	R452	NRSA63J-123N	RESISTOR
	R453	NRSA63J-123N	RESISTOR
	R454	NRSA63J-103N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R455	NRSA63J-103N	RESISTOR
	R457	NRSA63J-0R0A	RESISTOR
	R458	NRSA63J-102N	RESISTOR
	R459	NRSA63J-103N	RESISTOR
	R460	NRSA63J-103N	RESISTOR
	R462	NRSA63J-0R0A	RESISTOR
	R463	NRSA63J-333N	RESISTOR
	R464	NRSA63J-682N	RESISTOR
	R465	NRSA63J-104N	RESISTOR
	R466	NRSA63J-104N	RESISTOR
	R467	NRSA63J-104N	RESISTOR
	R468	NRSA63J-104N	RESISTOR
	R469	NRSA63J-104N	RESISTOR
	R470	NRSA63J-102N	RESISTOR
	R471	NRSA63J-104N	RESISTOR
	R473	NRSA63J-0R0A	RESISTOR
	R474	NRSA63J-222N	RESISTOR
	R475	NRSA63J-222N	RESISTOR
	R476	NRSA63J-0R0A	RESISTOR
	R477	NRSA63J-0R0A	RESISTOR
	R478	NRSA63J-0R0A	RESISTOR
	R479	ERT-D2FGL601S	RESISTOR
		OR NTH5D471KA	RESISTOR
		OR NTH5D471LA	RESISTOR
	B401	NRSA63J-0R0A	RESISTOR
	B402	NRSA63J-0R0A	RESISTOR
	B403	NRSA63J-0R0A	RESISTOR
	B404	NRSA63J-0R0A	RESISTOR
	B405	NRSA63J-0R0A	RESISTOR
	B406	NRSA63J-0R0A	RESISTOR
	C402	NCF31CZ-104A	CAPACITOR
	C403	QEE81AM-226	E CAPACITOR
	C404	QCFA1EZ-104	CAPACITOR
	C405	NCT07CH-180A	CAPACITOR
	C406	NCT07CH-220A	CAPACITOR
	C407	NCT07CH-220A	CAPACITOR
	C408	QEF80JM-106	TANTAL CAPACITOR
	C408-2	QEE81AM-476	E CAPACITOR
	C409	QER40JM-226	E CAPACITOR
	C410	QCFA1EZ-104	CAPACITOR
	C411	QER41CM-106	E CAPACITOR
	C412	ECEV0JV220R	E CAPACITOR
	C413	PU59758-105	CAPACITOR
		OR QCF81CZ-105	CAPACITOR
	C414	ECEV1CV100R	E CAPACITOR
	C415	ECEV0JV220R	E CAPACITOR
	C416	NCT07CH-101A	CAPACITOR
	C417	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C418	QEF80GM-226	TANTAL CAPACITOR
	C419	QEF80JM-106	TANTAL CAPACITOR
	C420	QEF80JM-475	TANTAL CAPACITOR
	C421	QEF81EM-474	TANTAL CAPACITOR
	C422	ECEV1CV100R	E CAPACITOR
	C423	NCB31EK-103A	CAPACITOR
	C424	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C425	NCS31HK-221A	CAPACITOR
	C426	NCF31CZ-104A	CAPACITOR
	C427	NCF31CZ-104A	CAPACITOR
	C428	NCF31CZ-104A	CAPACITOR
	C429	NCF31CZ-104A	CAPACITOR
	C430	NCF31CZ-104A	CAPACITOR
	C431	NCF31CZ-104A	CAPACITOR
	C432	NCF31CZ-104A	CAPACITOR
	C433	NCF31CZ-104A	CAPACITOR
	C436	YU40470-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L401	PU58201-120K	COIL
	L402	PU58201-120K	COIL
	L403	PU58201-120K	COIL
	L404	PU58201-120K	COIL
	L405	PU58201-120K	COIL
	L406	PU58201-120K	COIL
⚠	X401	YU40141	CRYSTAL RESONATOR
	SLD401	YU40341	INSULATOR
	CN401	YU40179-110	CAP HOUSING
	CN402	YU40108-10	FPC CONNECTOR
	CN403	YU40105-20	CAP HOUSING,(BOARD TO BOARD)
	CN404	YU40105-10	CAP HOUSING,(BOARD TO BOARD)
	CN405	YU40096-7	CAP HOUSING
	CN406	YU40096-4	CAP HOUSING
	CN407	YU40096-2	CAP HOUSING
	CN408	YU40096-10	CAP HOUSING
	CN409	YU40096-2R	CAP HOUSING
	CN410	YU40096-2B	CAP HOUSING

* * *

18. FULL AUTO WHITE BOARD ASSEMBLY <25>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20020D-03-C	FAW BOARD ASSY
	IC501	VC2038	IC
	IC502	BA10324F	IC
		OR IR3702N1	IC
		OR UPC324G2	IC
	IC503	BA10324F	IC
		OR IR3702N1	IC
		OR UPC324G2	IC
	D501	MA716	DIODE
	D502	MA716	DIODE
	PD501	PD170V1	PHOTO DIODE
	R501	NRSA63J-154N	RESISTOR
	R502	NRSA63J-123N	RESISTOR
	R503	NVP1301-223N	V RESISTOR,AW INDOOR B
	R504	NRSA63J-563N	RESISTOR
	R505	NRSA63J-183N	RESISTOR
	R506	NVP1301-223N	V RESISTOR,AW INDOOR R
	R507	NRSA63J-563N	RESISTOR
	R508	NRSA63J-223N	RESISTOR
	R509	NRSA63J-683N	RESISTOR
	R511	NRSA63J-473N	RESISTOR
	R512	NRSA63J-473N	RESISTOR
	R513	NRSA63J-823N	RESISTOR
	R514	NRSA63J-153N	RESISTOR
	R515	NVP1301-473N	V RESISTOR,AW R INDOOR LIM
	R516	NRSA63J-273N	RESISTOR
	R517	NRSA63J-0R0A	RESISTOR
	R518	NVP1301-473N	V RESISTOR,AW R OUTDOOR LIM
	R519	NRSA63J-333N	RESISTOR
	R520	NRSA63J-0R0A	RESISTOR
	R521	NVP1301-473N	V RESISTOR,PRE B INDOOR
	R522	NRSA63J-473N	RESISTOR
	R523	NRSA63J-0R0A	RESISTOR
	R524	NVP1301-473N	V RESISTOR,PRE B FL
	R525	NRSA63J-473N	RESISTOR
	R526	NRSA63J-0R0A	RESISTOR
	R527	NVP1301-473N	V RESISTOR,PRE B OUTDOOR
	R528	NRSA63J-473N	RESISTOR
	R529	NRSA63J-103N	RESISTOR
	R530	NVP1301-473N	V RESISTOR,AW B OUTDOOR LIM
	R531	NRSA63J-563N	RESISTOR
	R533	NRSA63J-153	RESISTOR
	R534	NVP1301-473N	V RESISTOR,AW B INDOOR LIM
	R535	NRSA63J-473N	RESISTOR
	R536	NRSA63J-123N	RESISTOR
	R537	NVP1301-473N	V RESISTOR,PRE R INDOOR
	R538	NRSA63J-273N	RESISTOR
	R539	NRSA63J-103N	RESISTOR
	R540	NVP1301-473N	V RESISTOR,PRE R FL
	R541	NRSA63J-333N	RESISTOR
	R542	NRSA63J-103N	RESISTOR
	R543	NVP1301-473N	V RESISTOR,PRE R OUTDOOR
	R544	NRSA63J-393N	RESISTOR
	R548	NRSA63J-104N	RESISTOR
	R549	NVP1301-224N	V RESISTOR,AW B GAIN
	R550	NRSA63J-103N	RESISTOR
	R551	NRSA63J-153N	RESISTOR
	R553	NVP1301-224N	V RESISTOR,AW R GAIN
	R554	NRSA63J-103N	RESISTOR
	R555	NRSA63J-104N	RESISTOR
	R556	NRSA63J-153N	RESISTOR
	R557	NRSA63J-562N	RESISTOR
	R558	NRSA63J-102N	RESISTOR
	R559	NRSA63J-102N	RESISTOR
	R560	NRSA63J-122N	RESISTOR
	R561	NRSA63J-103N	RESISTOR
	R562	NRSA63J-103N	RESISTOR
	R563	NRSA63J-222N	RESISTOR
	R565	NRSA63J-153N	RESISTOR
	R579	NRSA63J-472N	RESISTOR
	R580	NRSA63J-0R0A	RESISTOR
	B601	NRSA63J-0R0A	RESISTOR
	B602	NRSA63J-0R0A	RESISTOR
	B603	NRSA63J-0R0A	RESISTOR
	B604	NRSA63J-0R0A	RESISTOR
	B605	NRSA63J-0R0A	RESISTOR
	B606	NRSA63J-0R0A	RESISTOR
	B607	NRSA63J-0R0A	RESISTOR
	B608	NRSA63J-0R0A	RESISTOR
	C501	NEH11CM-106NZ	E CAPACITOR
	C502	PU59758-105	CAPACITOR
	C503	NCB31EK-103A	CAPACITOR
	C504	NEH10GM-476NZ	E CAPACITOR
	C505	NCB31HK-152A	CAPACITOR
	C506	NCB31HK-152A	CAPACITOR
	C507	NCB31HK-152A	CAPACITOR
	C508	NEH10GM-476NZ	E CAPACITOR
	C509	NEH10JM-226NZ	E CAPACITOR
	C510	NCB31EK-103A	CAPACITOR
	C511	NCB31EK-103A	CAPACITOR
	C515	NEH11EM-475NZ	E CAPACITOR
	C516	NEH11EM-475NZ	E CAPACITOR
	L501	PU58201-220K	COIL
	SW501	PU57008	SWITCH(TACT),BLC
	SW502	PU57008	SWITCH(TACT),FADER
	FIL1	YQ40394	WHITE FILTER
	SLD1	YQ40395	SHIELD CASE
	SLD2	YQ40396	SHIELD PLAT
	TP501	PU59111-2	TEST PIN

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	TP502	PU59111-2	TEST PIN
	TP503	PU59111-2	TEST PIN
	TP504	PU59111-2	TEST PIN
	CN501	YU40101-10	CAP HOUSING,(BOARD TO BOARD)

* * *

19. MIC AMP BOARD ASSEMBLY <26>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB30009A-02-C	MIC AMP BOARD ASSY
	IC701	M5282FP	IC
	R701	NRSA63J-102N	RESISTOR
	R702	NRSA63J-562N	RESISTOR
	R703	NRSA63J-102N	RESISTOR
	R704	NRSA63J-473N	RESISTOR
	R705	NRSA63J-221N	RESISTOR
	R706	NRSA63J-223N	RESISTOR
	R708	NRSA63J-682N	RESISTOR
	R709	NRSA63J-103N	RESISTOR
	R711	NRSA63J-222N	RESISTOR
	R712	NRSA63J-0R0A	RESISTOR
	C701	ECEV1EV4R7R	E CAPACITOR
	C702	ECEV1CV470P	E CAPACITOR
	C703	NEH10GM-476NZ	E CAPACITOR
	C704	NCT07CH-101A	CAPACITOR
	C705	ECEV1EV4R7R	E CAPACITOR
	C706	NCB31HK-152A	CAPACITOR
	C707	ECEV1EV4R7R	E CAPACITOR
	C708	ECEV1CV470P	E CAPACITOR

* * *

20. LED BOARD <33>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWB	YB40001	LED PWB

* * *

21. ELECTRICAL VIEWFINDER BOARD ASSEMBLY

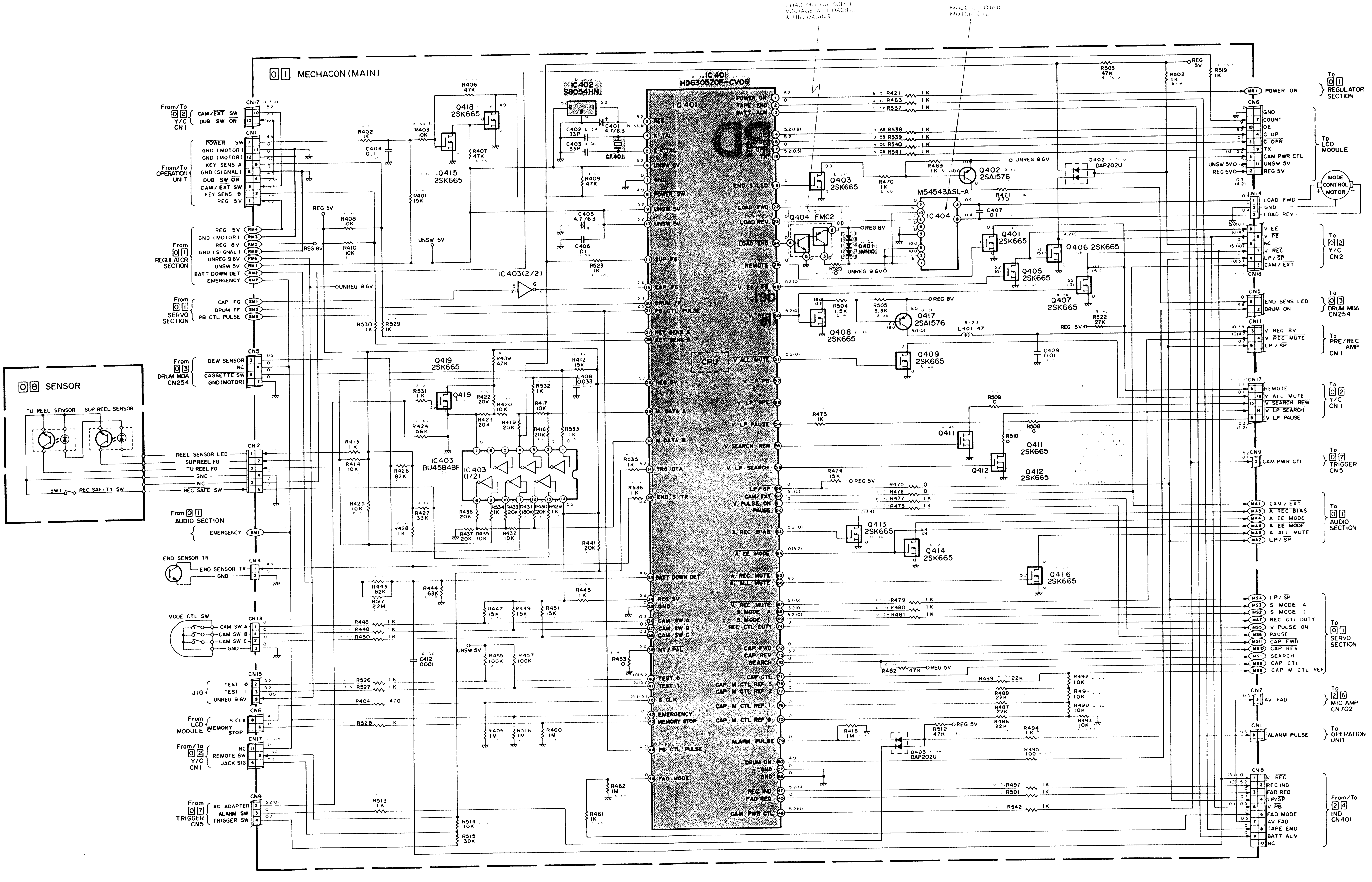
#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YU40355B-01-C	E.VIEWFINDER BOARD ASSY
⚠	TF	PU48295	TH FUSE
⚠	IC1	BA7125L	IC
	D21	DAN202K	DIODE
	D31	1SS133	DIODE
	D32	1SS136	DIODE
	D33	ERA15-06TU20	DIODE
	D34	ERA15-06TU20	DIODE
	RX1	QRD163J-0R0	RESISTOR
	RX2	QRD163J-0R0	RESISTOR
	VR1	QVZ3521-103	V RESISTOR
	VR2	QVZ3521-102	V RESISTOR
	VR3	QVZ3521-222	V RESISTOR
	VR4	YU40382	V RESISTOR
	R01	QRSA08J-821YN	RESISTOR
	R02	QRSA08J-824YN	RESISTOR
	R03	QRSA08J-120YN	RESISTOR
	R04	QRSA08J-104YN	RESISTOR
	R05	QRSA08J-103YN	RESISTOR
	R06	QRSA08J-124YN	RESISTOR
	R07	QRSA08J-682YN	RESISTOR
	R08	QRSA08J-472YN	RESISTOR
	R09	QRSA08J-471YN	RESISTOR
	R10	QRSA08J-471YN	RESISTOR
	R21	QRSA08J-472YN	RESISTOR
	R22	QRSA08J-561YN	RESISTOR
	R23	QRSA08J-203YN	RESISTOR
	R24	QRSA08J-103YN	RESISTOR
	R25	QRSA08J-103YN	RESISTOR
	R26	QRSA08J-102YN	RESISTOR
	R27	QRSA08J-334YN	RESISTOR
	R31	QRSA08J-332YN	RESISTOR
	R32	QRD183J-625	RESISTOR
	C01	QFN41HJ-222	M CAPACITOR
	C02	QER41CM-106	E CAPACITOR
	C03	QCYA1HK-103	CAPACITOR
	C04	QEK40JM-227	E CAPACITOR
	C05	QER41AM-226	E CAPACITOR
	C06	QCYA1HK-102	CAPACITOR
	C07	QEK41AM-107	E CAPACITOR
	C08	QER41HM-105	E CAPACITOR
	C09	QCYA1HK-223	CAPACITOR
	C10	QEK41AM-107	E CAPACITOR
	C11	QER41HM-104	E CAPACITOR
	C12	QER41HM-104	E CAPACITOR
	C13	QCTA1CH-161	CAPACITOR
	C14	QCYA1HK-682	CAPACITOR
	C15	QFN41HJ-473	M CAPACITOR
	C21	QER41CM-106	E CAPACITOR
	C22	QER41CM-106	E CAPACITOR
	C23	QCTA1CH-161	CAPACITOR
	C24	QER41HM-225	E CAPACITOR
	C31	QER41VM-106	E CAPACITOR
	C32	QER41HM-105	E CAPACITOR
	C33	QEK41AM-107	E CAPACITOR
	C34	QFG42AJ-222	PP CAPACITOR
		QFG42AJ-272	PP CAPACITOR
		QFG42AJ-332	PP CAPACITOR
		QFG42AJ-392	PP CAPACITOR
		QFG42AJ-472	PP CAPACITOR
		QFG42AJ-152	PP CAPACITOR
		QFG42AJ-122	PP CAPACITOR
		QFG42AJ-821	PP CAPACITOR
		QFG42AJ-102	PP CAPACITOR
		QFG42AJ-182	PP CAPACITOR
	C35	PU59343	FM CAPACITOR
	C36	QCFA1HZ-333	CAPACITOR
	L1	PU53223-101H	PEAKING COIL
	L2	PU49995-101	PEAKING COIL
	L3	YU40353	H.L.COIL
⚠	TR1	2SC3665	TRANSISTOR
	TR2	2SC2812L6,L7	TRANSISTOR
⚠	T3	YU40375	FBT
	CN1	YU40354	VF CABLE
	CN2	YU40351	CRT SOCKET
⚠	CP	ICP-N10	CIRCUIT PROTECTOR

GR-45S REVISED MAIN BOARD

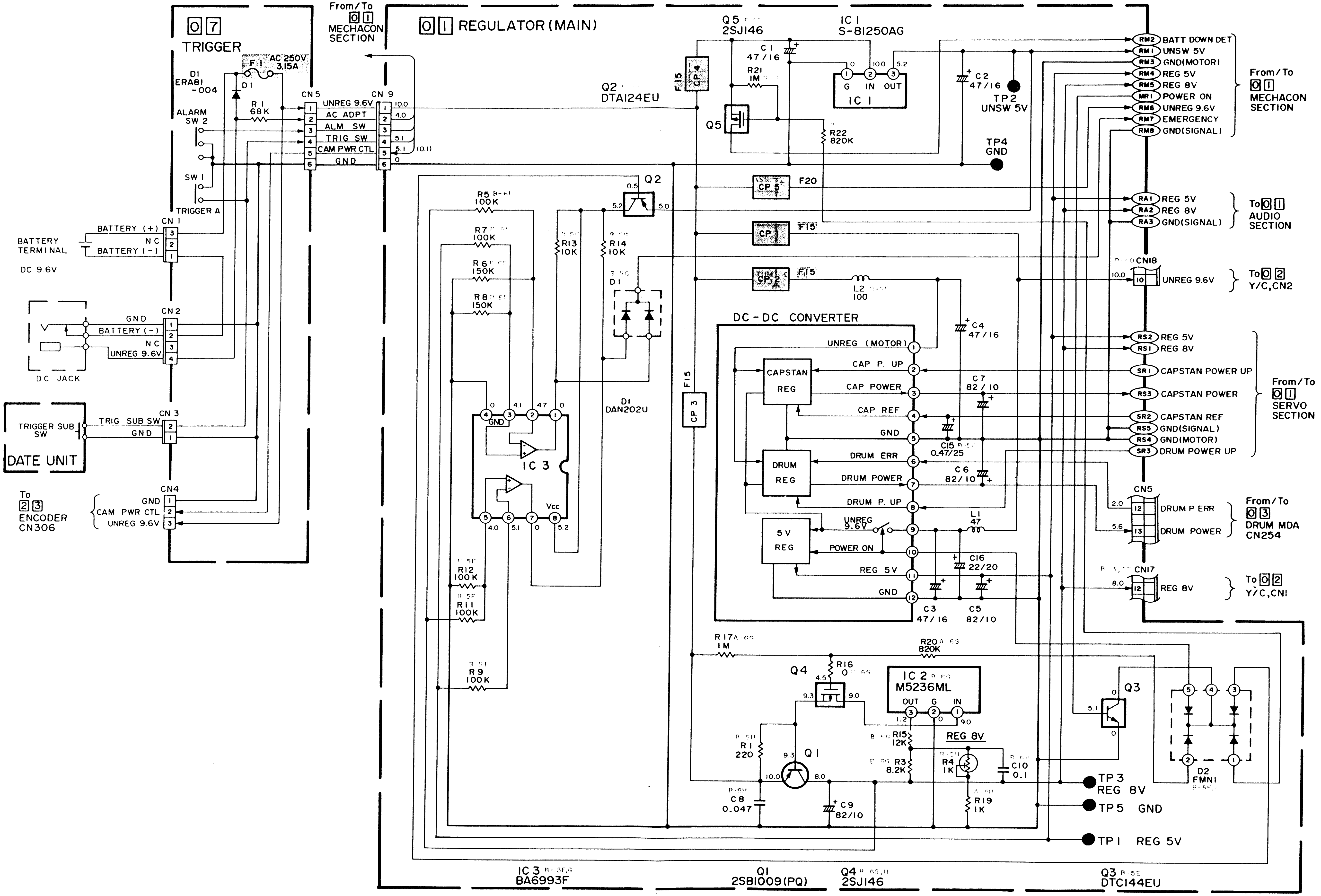
This is an additional to the No. 86027 Service Manual for the GR-45S model. Insert this addition in the No. 86027 Service Manual and use for sets middle with August 1988 production.

No. 86027B
August 1989

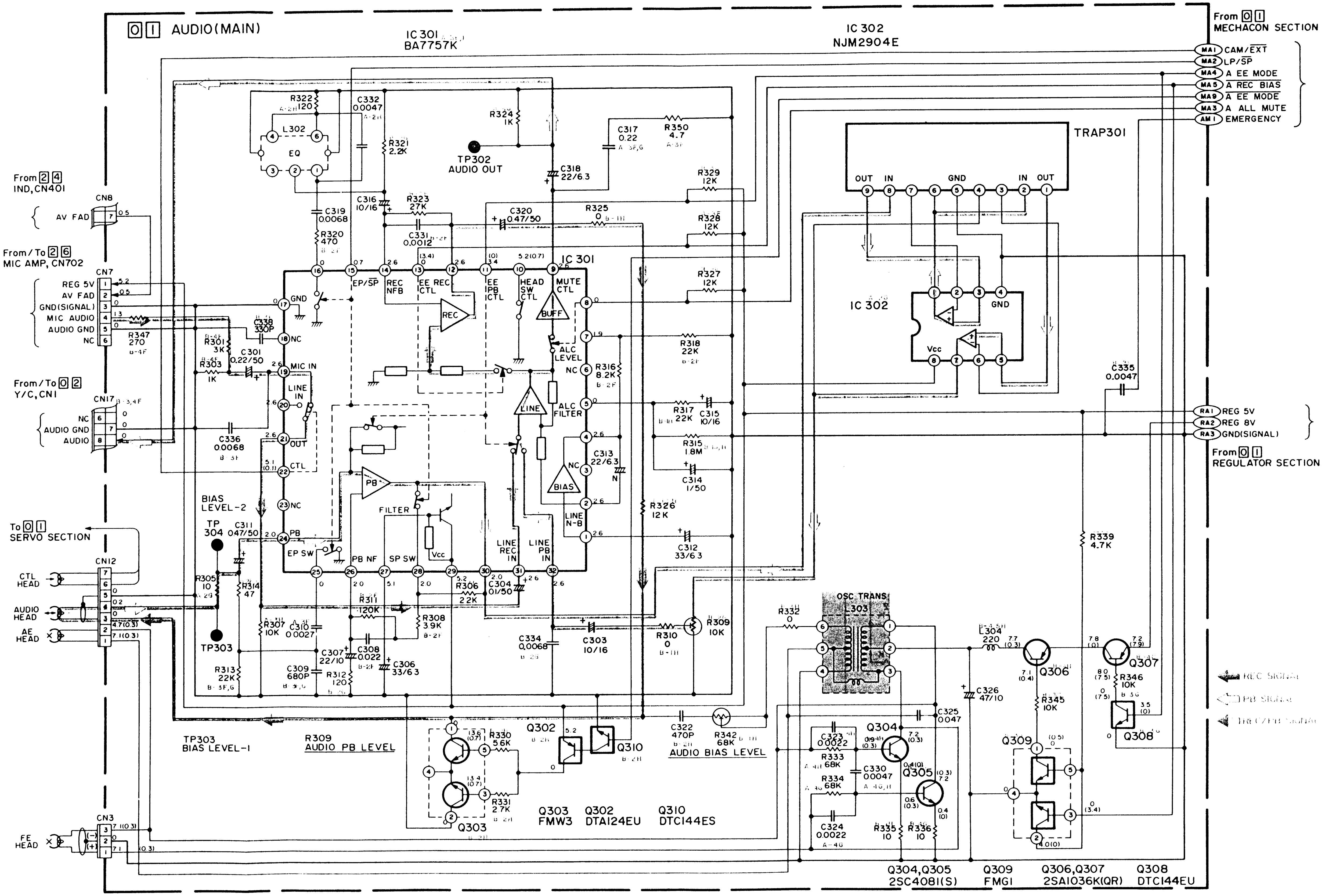
4.12 SCHEMATIC DIAGRAM OF MAIN BOARD ASSEMBLY (MECHACON SECTION)


LOAD MOTOR SUPPLY VOLTAGE AT LOADING & UNLOADING
MODE CONTROL MOTOR CTL
01 MECHACON (MAIN)
IC401 HD6305Z0F-CV06
IC402 S8054HN
IC403(2/2)
IC403 BU4584BF
IC404 M54543ASL-A
CPU
Q401 2SK665
Q402 2SA1576
Q403 2SK665
Q404 FMC2
Q405 2SK665
Q406 2SK665
Q407 2SK665
Q408 2SK665
Q409 2SK665
Q411 2SK665
Q412 2SK665
Q413 2SK665
Q414 2SK665
Q415 2SK665
Q416 2SK665
Q417 2SA1576
Q418 2SK665
Q419 2SK665
D401 1MN10
D402 DAP202U
D403 DAP202U
08 SENSOR
TU REEL SENSOR
SUP REEL SENSOR
SW1 REC SAFETY SW
From/To 02 Y/C CN1
CAM/EXT SW
DUB SW ON
From/To OPERATION UNIT
POWER SW
GND (MOTOR)
KEY SENS A
GND (SIGNAL)
DUB SW ON
KEY SENS B
REG 5V
From 01 REGULATOR SECTION
REG 8V
UNREG 9.6V
UNSW 5V
BATT DOWN DET
EMERGENCY
From 01 SERVO SECTION
CAP FG
DRUM FF
PB CTL PULSE
From 03 DRUM MDA CN254
DEW SENSOR
CASSETTE SW
REEL SENSOR LED
SUP REEL FG
TU REEL FG
REC SAFE SW
From 01 AUDIO SECTION
END SENSOR TR
MODE CTL SW
CAM SW A
CAM SW B
CAM SW C
JIG
TEST 0
TEST 1
From LCD MODULE
S CLK
MEMORY STOP
REMOTE SW
JACK SIG
From 07 TRIGGER CN5
AC ADAPTER
ALARM SW
TRIGGER SW
POWER ON
TAPE END
BATT ALM
END S LED
LOAD FWD
LOAD REV
LOAD END
REMOTE
V EE / PB
V REC
V ALL MUTE
V LP PB
V LP SPC
V LP PAUSE
V SEARCH REW
V LP SEARCH
LP/SP
CAM/EXT
V PULSE ON
PAUSE
A REC BIAS
A EE MODE
A REC MUTE
A ALL MUTE
V REC MUTE
S MODE A
S MODE 1
REC CTL DUTY
CAP FWD
CAP REV
SEARCH
CAP CTL
CAP M CTL REF 3
CAP M CTL REF 2
CAP M CTL REF 1
CAP M CTL REF 0
ALARM PULSE
DRUM ON
REC IND
FAD REQ
CAM PWR CTL
RES
X'TAL
UNSW 5V
SUP FG
CAP FG
KEY SENS A
KEY SENS B
REG 5V
M DATA A
M DATA B
TRG DTA
END S TR
BATT DOWN DET
INT/PAL
TEST 0
TEST 1
S CLK
EMERGENCY
PB CTL PULSE
FAD MODE
To 01 REGULATOR SECTION
To LCD MODULE
CN6
GND
COUNT
OE
C UP
C OPR
TX
CAM PWR CTL
UNSW 5V
REG 5V
MODE CONTROL MOTOR
CN14
To 02 Y/C CN2
V EE
V PB
NC
V REC
LP/SP
CAM/EXT
To 03 DRUM MDA CN254
END SENS LED
DRUM ON
To PRE/REC AMP CN1
V REC 8V
V REC MUTE
To 02 Y/C CN1
REMOTE
V ALL MUTE
V SEARCH REW
V LP SEARCH
V LP PAUSE
To 07 TRIGGER CN5
CAM PWR CTL
To 01 AUDIO SECTION
CAM/EXT
A REC BIAS
A EE MODE
A ALL MUTE
To 01 SERVO SECTION
LP/SP
S MODE A
S MODE 1
REC CTL DUTY
V PULSE ON
PAUSE
CAP FWD
CAP REV
SEARCH
CAP CTL
CAP M CTL REF
To 26 MIC AMP CN702
AV FAD
To OPERATION UNIT
ALARM PULSE
From/To 24 IND CN401
V REC
REC IND
FAD REQ
LP/SP
V PB
FAD MODE
AV FAD
TAPE END
BATT ALM
NC

4.13 SCHEMATIC DIAGRAM OF MAIN BOARD ASSEMBLY (REGULATOR SECTION)

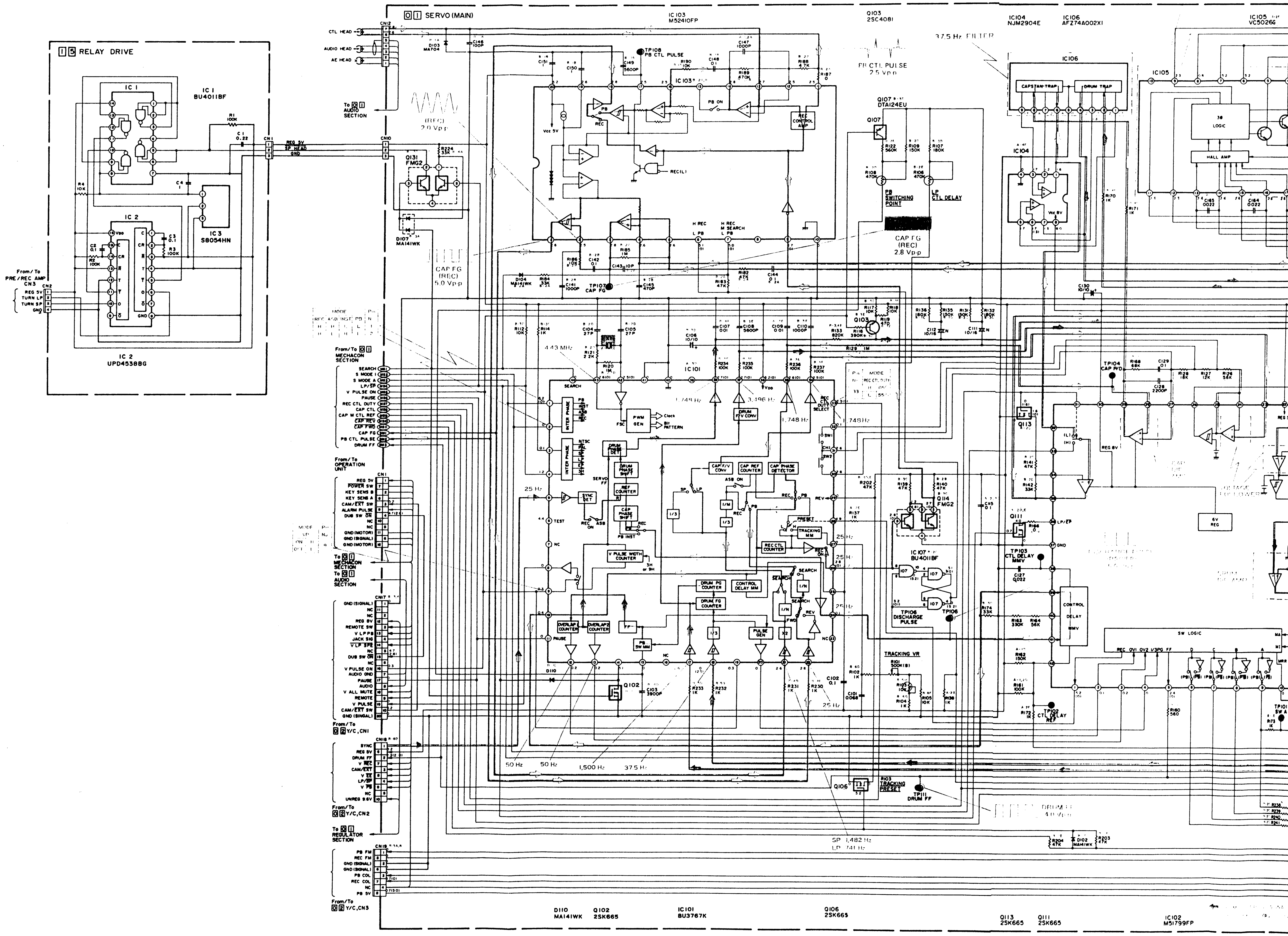

07 TRIGGER
From/To 01 MECHACON SECTION
01 REGULATOR (MAIN)
F1 AC 250V 3.15A
D1 ERA81-004
D1
R1 68K
ALARM SW 2
SW 1
TRIGGER A
CN5
CN9
UNREG 9.6V
AC ADPT
ALM SW
TRIG SW
CAM PWR CTL
GND
10.0
4.0
5.1
5.1 (0.1)
0
BATTERY TERMINAL
DC 9.6V
CN1
BATTERY (+)
NC
BATTERY (-)
CN2
GND
BATTERY (-)
NC
UNREG 9.6V
DC JACK
CN3
TRIGGER SUB SW
TRIG SUB SW
GND
DATE UNIT
To 23 ENCODER CN306
CN4
GND
CAM PWR CTL
UNREG 9.6V
Q2 DTA124EU
Q5 2SJ146
C1 47/16
R21 1M
IC1 S-81250AG
G IN OUT
C2 47/16
TP2 UNSW 5V
TP4 GND
R22 820K
F15 CP4
CP5 F20
CP F15
CP2 F15
L2 100
R5 100K
R7 100K
R6 150K
R8 150K
R13 10K
R14 10K
D1 DAN202U
IC3
GND
Vcc
4.0 5.1 0 5.2
0 4.1 4.7 0
R12 100K
R11 100K
R9 100K
CP3 F15
DC-DC CONVERTER
UNREG (MOTOR)
CAP P. UP
CAP POWER
CAP REF
GND
DRUM ERR
DRUM POWER
DRUM P. UP
UNREG 9.6V
POWER ON
REG 5V
GND
CAPSTAN REG
DRUM REG
5V REG
C4 47/16
C7 82/10
C15 0.47/25
C6 82/10
L1 47
C16 22/20
C3 47/16
C5 82/10
R17 1M
R20 820K
R16 0
Q4
IC2 M5236ML
OUT G IN
1.2 9.0
R15 12K
REG 8V
R1 220
Q1
R3 8.2K
R4 1K
C10 0.1
R19 1K
C8 0.047
C9 82/10
9.3 10.0 8.0
Q3
D2 FMN1
TP3 REG 8V
TP5 GND
TP1 REG 5V
RM2 BATT DOWN DET
RM1 UNSW 5V
RM3 GND(MOTOR)
RM4 REG 5V
RM5 REG 8V
MR1 POWER ON
RM6 UNREG 9.6V
RM7 EMERGENCY
RM8 GND(SIGNAL)
From/To 01 MECHACON SECTION
RA1 REG 5V
RA2 REG 8V
RA3 GND(SIGNAL)
To 01 AUDIO SECTION
CN18
10.0
UNREG 9.6V
To 02 Y/C, CN2
RS2 REG 5V
RS1 REG 8V
SR1 CAPSTAN POWER UP
RS3 CAPSTAN POWER
SR2 CAPSTAN REF
RS5 GND(SIGNAL)
RS4 GND(MOTOR)
SR3 DRUM POWER UP
From/To 01 SERVO SECTION
CN5
2.0 DRUM P ERR
5.6 DRUM POWER
From/To 03 DRUM MDA CN254
CN17
8.0 REG 8V
To 02 Y/C, CN1
IC3 BA6993F
Q1 2SB1009(PQ)
Q4 2SJ146
Q3 DTC144EU

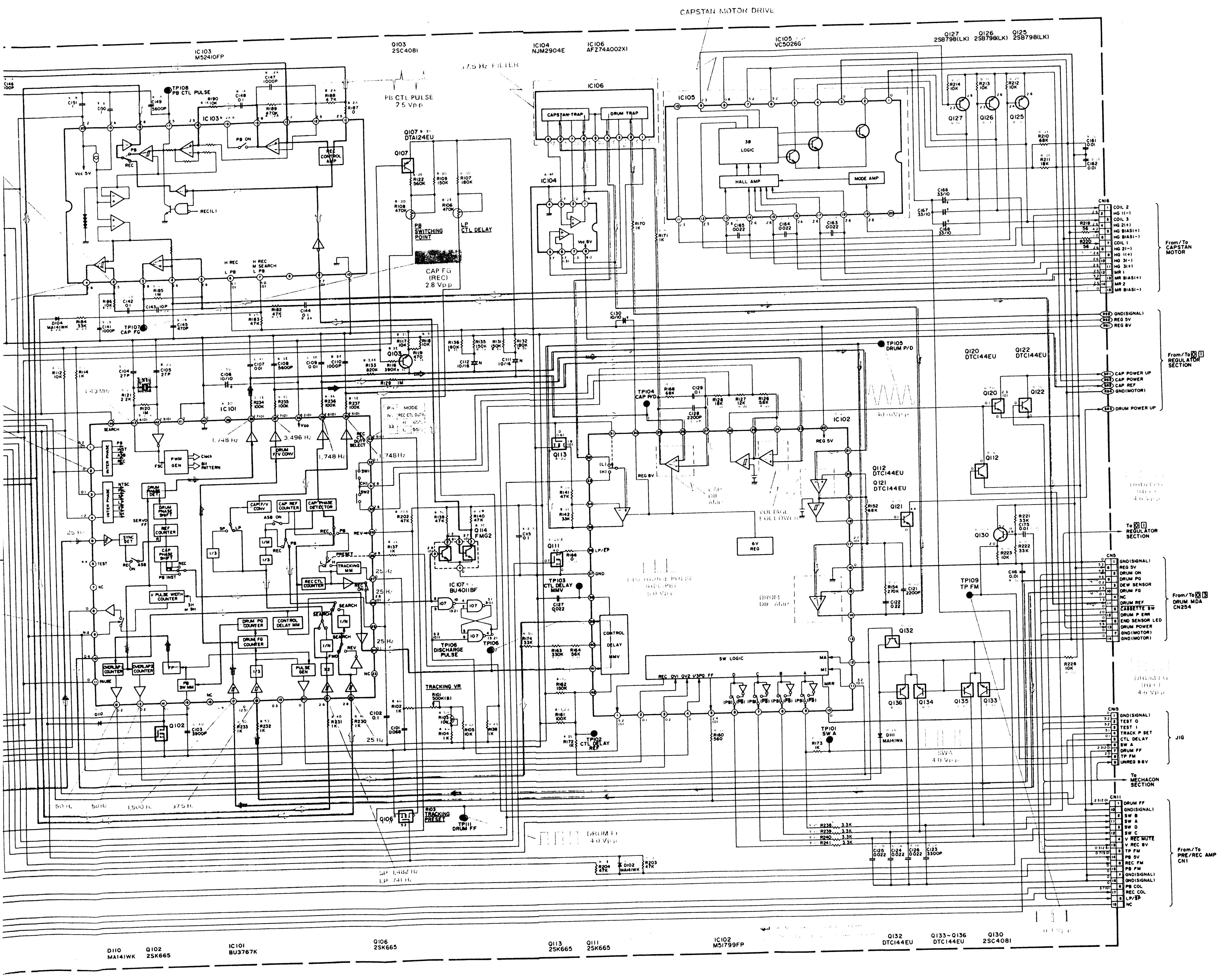
4.14 SCHEMATIC DIAGRAM OF MAIN BOARD ASSEMBLY (AUDIO SECTION)



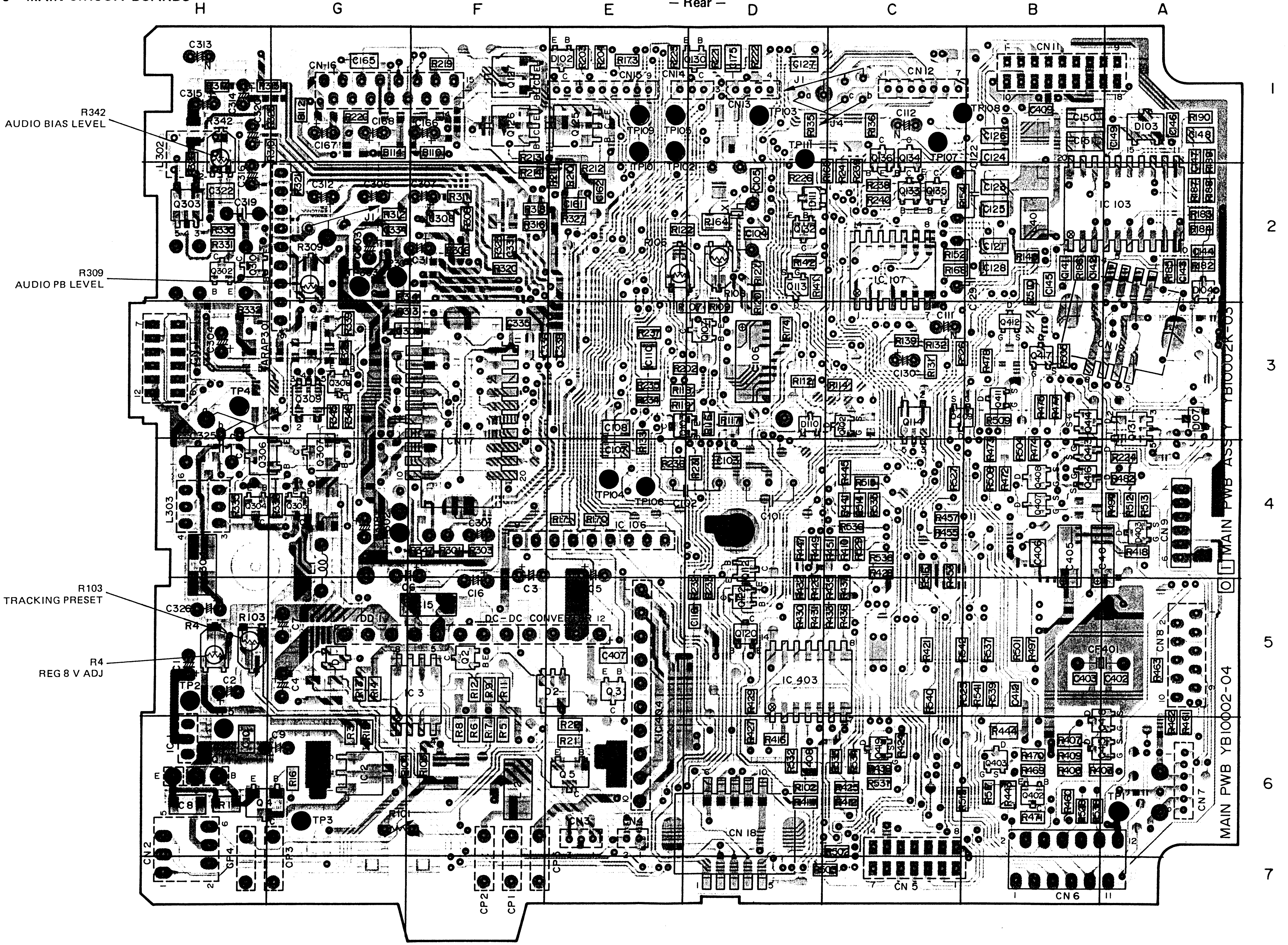
01 AUDIO(MAIN)
IC 301
BA7757K
IC 302
NJM2904E
From 01
MECHACON SECTION
MA1 CAM/EXT
MA2 LP/SP
MA4 A EE MODE
MA5 A REC BIAS
MA9 A EE MODE
MA3 A ALL MUTE
AM1 EMERGENCY
TRAP301
OUT IN GND IN OUT
IC 302
GND
Vcc
C335
0.0047
RA1 REG 5V
RA2 REG 8V
RA3 GND(SIGNAL)
From 01
REGULATOR SECTION
R322 120
C332 0.0047
L302
EQ
R321 2.2K
R324 1K
TP302
AUDIO OUT
C317 0.22
R350 4.7
C318 22/63
R329 12K
From 24
IND,CN401
CN8
AV FAD
C316 10/16
R323 27K
C319 0.0068
C320 0.47/50
R325 0
R328 12K
R320 470
C331 0.0012
From/To 26
MIC AMP, CN702
CN7
REG 5V
AV FAD
GND(SIGNAL)
MIC AUDIO
AUDIO GND
NC
EP/SP
REC NFB
EE REC CTL
EE IPB ICTL
HEAD SW CTL
MUTE CTL
IC 301
R327 12K
GND
REC
BUFF
C338 330P
R301 3K
R347 270
NC
C301 0.22/50
R303 1K
MIC IN
ALC LEVEL
NC
R316 8.2K
R318 22K
From/To 02
Y/C, CN1
CN17
NC
AUDIO GND
AUDIO
LINE IN
LINE
ALC FILTER
R317 22K
C315 10/16
R315 1.8M
C336 0.0068
OUT
CTL
C313 22/63
C314 1/50
NC
BIAS
BIAS LEVEL-2
NC
PB
FILTER
R326 12K
LINE N-8
TP 304
C311 0.47/50
PB
EP SW
PB NF
SP SW
Vcc
LINE REC IN
LINE PB IN
C312 33/63
To 01
SERVO SECTION
CN12
CTL HEAD
AUDIO HEAD
AE HEAD
R305 10
R314 47
R306 22K
C304 0.1/50
R311 120K
R308 3.9K
R307 10K
C310 0.0027
TP303
C307 22/10
C308 0.022
C306 33/63
R313 22K
C309 680P
R312 120
C334 0.0068
C303 10/16
R310 0
R309 10K
R332 0
OSC TRANS
L303
L304 220
Q306
Q307
C326 47/10
R346 10K
R345 10K
R339 4.7K
C325 0.047
Q304
Q305
Q309
Q308
C322 470P
R342 68K
AUDIO BIAS LEVEL
C323 0.0022
R333 68K
C330 0.0047
R334 68K
C324 0.0022
R335 10
R336 10
TP303
BIAS LEVEL-1
R309
AUDIO PB LEVEL
R330 5.6K
Q302
Q310
R331 2.7K
Q303
Q303 FMW3
Q302 DTA124EU
Q310 DTC144ES
CN3
FE HEAD
Q304,Q305 2SC4081(S)
Q309 FMG1
Q306,Q307 2SA1036K(QR)
Q308 DTC144EU
REC SIGNAL
PB SIGNAL
REC/PB SIGNAL

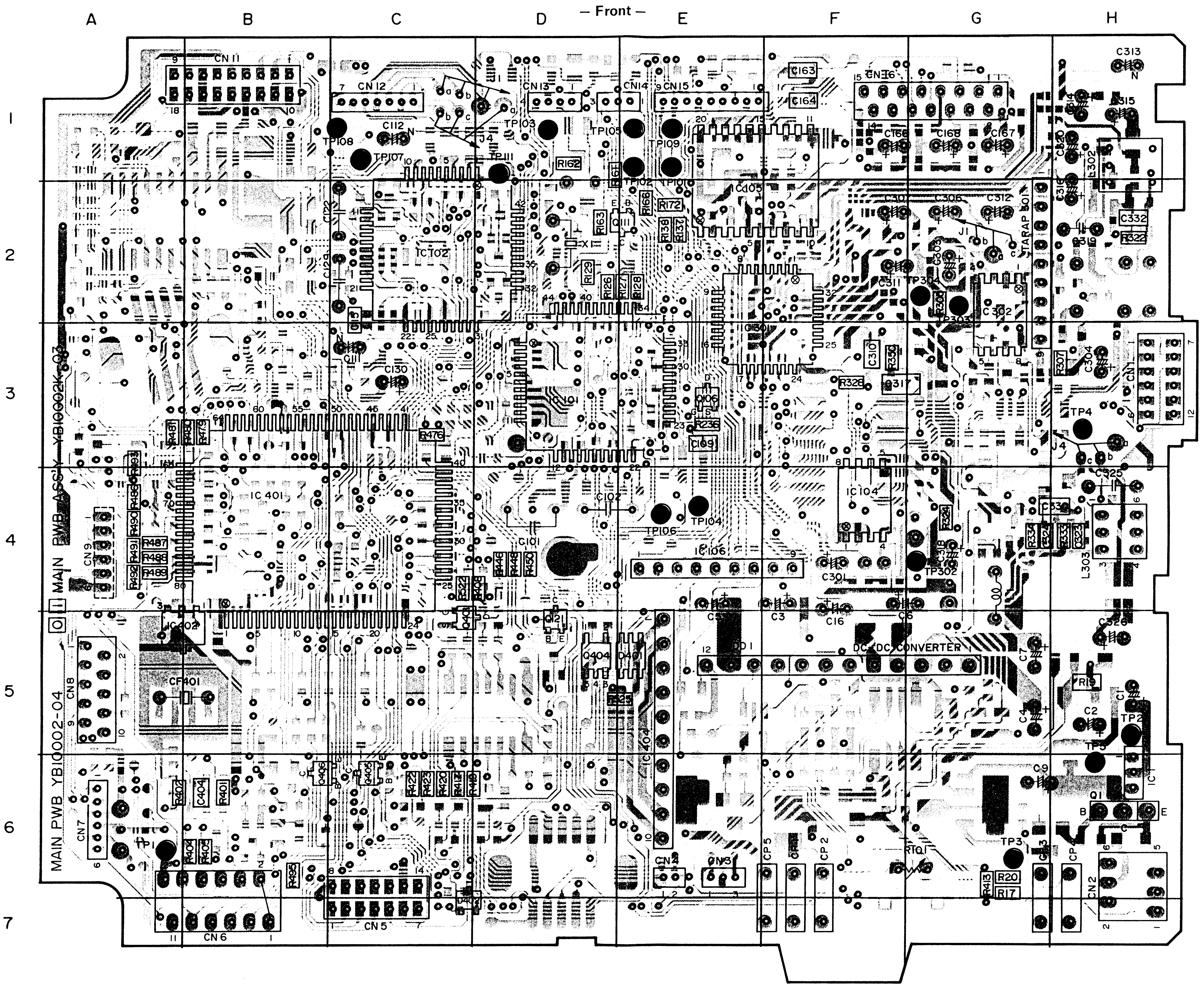
4.15 SCHEMATIC DIAGRAM OF MAIN BOARD ASSEMBLY (SERVO SECTION)


CAPSTAN MOTOR DRIVE
1 5 RELAY DRIVE
IC 1 BU4011BF
IC 2 UPD4538BG
IC 3 S8054HN
From/To PRE/REC AMP CN3
REG 5V
TURN LP
TURN SP
GND
0 1 SERVO (MAIN)
CTL HEAD
AUDIO HEAD
AE HEAD
IC103 M52410FP
Q103 2SC4081
IC104 NJM2904E
IC106 AFZ74A002X1
IC105 VC5026
TP108 PB CTL PULSE
PB CTL PULSE 2.5 Vp-p
37.5 Hz FILTER
CAPSTAN TRAP
DRUM TRAP
LOGIC
HALL AMP
Q107 DTA124EU
PB SWITCHING POINT
LP CTL DELAY
CAP FG (REC) 2.8 Vp-p
CAP FG (REC) 5.0 Vp-p
(REC) 2.0 Vp-p
To 0 1 AUDIO SECTION
Q131 FMG2
D107 MA141WK
D103 MA704
TP107 CAP FG
From/To 0 1 MECHACON SECTION
SEARCH
S MODE 1
S MODE A
LP/SP
V PULSE ON
PAUSE
REC CTL DUTY
CAP CTL
CAP M CTL REF
CAP REV
CAP FWD
CAP FG
PB CTL PULSE
DRUM FF
From/To OPERATION UNIT
REG 5V
POWER SW
KEY SENS B
KEY SENS A
CAM/EXT SW
ALARM PULSE
DUB SW ON
NC
GND (MOTOR)
GND (SIGNAL)
To 0 1 MECHACON SECTION
To 0 1 AUDIO SECTION
CN17
REG 8V
REMOTE SW
V LP PB
JACK SIG
V LP SP
DUB SW ON
V PULSE ON
AUDIO GND
AUDIO
V ALL MUTE
REMOTE
V PULSE
CAM/EXT SW
From/To 0 2 Y/C, CN1
CN18
SYNC
DRUM FF
V REC
CAM/EXT
V EE
LP/SP
V PB
UNREG 9.6V
From/To 0 2 Y/C, CN2
To 0 1 REGULATOR SECTION
CN19
PB FM
REC FM
PB COL
REC COL
PB 5V
From/To 0 2 Y/C, CN3
IC101
4.43 MHz
INTER PHASE
PWM GEN
DRUM F/V CONV
DRUM PHASE DET
DRUM PHASE SHIFT
REF COUNTER
CAP PHASE SHIFT
SYNC DET
CAP F/V CONV
CAP REF COUNTER
CAP PHASE DETECTOR
TRACKING MM
RECCTL COUNTER
V PULSE WIDTH COUNTER
DRUM PG COUNTER
CONTROL DELAY MM
DRUM FG COUNTER
OVERLAP1 COUNTER
OVERLAP2 COUNTER
PB SW MM
PULSE GEN
REC CTL DUTY SELECT
1,748 Hz
3,196 Hz
25 Hz
50 Hz
1,500 Hz
37.5 Hz
SP 1,482 Hz
LP 741 Hz
Q114 FMG2
IC107 BU4011BF
TP106 DISCHARGE PULSE
TRACKING VR
Q106
TRACKING PRESET
TP111 DRUM FF
DRUM FF 4.0 Vp-p
TP104 CAP P/D
Q113
Q111
TP103 CTL DELAY MMV
CONTROL DELAY MMV
TP102 CTL DELAY REF
SW LOGIC
6V REG
D104 MA141WK
D102 MA141WK
D110 MA141WK
Q102 2SK665
IC101 BU3767K
Q106 2SK665
Q113 2SK665
Q111 2SK665
IC102 M51799FP


CAPSTAN MOTOR DRIVE
IC103 M52410FP
Q103 2SC4081
IC104 NJM2904E
IC106 AFZ74A002XI
IC105 VC5026G
Q127 2SB798(LK)
Q126 2SB798(LK)
Q125 2SB798(LK)
TP108 PB CTL PULSE
37.5 Hz FILTER
PB CTL PULSE 2.5 Vp-p
Q107 DTA124EU
PB SWITCHING POINT
LP CTL DELAY
CAP FG (REC) 2.8 Vp-p
CAPSTAN TRAP
DRUM TRAP
3φ LOGIC
HALL AMP
MODE AMP
REC CONTROL AMP
TP107 CAP FG
IC101
TP105 DRUM P/D
TP104 CAP P/D
IC102
REG 5V
REG 8V
Q112 DTC144EU
Q121 DTC144EU
Q120 DTC144EU
Q122 DTC144EU
Q113
Q111
Q114 FMG2
IC107 BU4011BF
TP106 DISCHARGE PULSE
TP103 CTL DELAY MMV
CONTROL DELAY MMV
6V REG
VOLTAGE FOLLOWER
SW LOGIC
TP101 SW A
TP102 CTL DELAY REF
TP109 TP FM
Q130
Q132
Q133
Q134
Q135
Q136
TRACKING VR
Q106
R103 TRACKING PRESET
TP111 DRUM FF
Q102
1.748 Hz
3.496 Hz
INTER PHASE
PWM GEN
DRUM F/V CONV
CAP F/V CONV
CAP REF COUNTER
CAP PHASE DETECTOR
REC CTL COUNTER
TRACKING MM
V PULSE WIDTH COUNTER
DRUM PG COUNTER
DRUM FG COUNTER
CONTROL DELAY MM
PULSE GEN
OVERLAP1 COUNTER
OVERLAP2 COUNTER
PB SW MM
25 Hz
50 Hz
1,500 Hz
37.5 Hz
SP 1,482 Hz
LP 741 Hz
DRUM FF 4.0 Vp-p
SW A 4.0 Vp-p
CN16
COIL 2
HG 1(-)
COIL 3
HG 2(+)
HG BIAS(+)
HG BIAS(-)
COIL 1
HG 2(-)
HG 1(+)
HG 3(-)
HG 3(+)
MR 1
MR BIAS(+)
MR 2
MR BIAS(-)
From/To CAPSTAN MOTOR
GND(SIGNAL)
REG 5V
REG 8V
CAP POWER UP
CAP POWER
CAP REF
GND(MOTOR)
DRUM POWER UP
From/To REGULATOR SECTION
To REGULATOR SECTION
CN5
GND(SIGNAL)
REG 5V
DRUM ON
DRUM PG
DEW SENSOR
DRUM FG
NC
DRUM REF
CASSETTE SW
DRUM P ERR
END SENSOR LED
DRUM POWER
GND(MOTOR)
GND(MOTOR)
From/To DRUM MDA CN254
CN15
GND(SIGNAL)
TEST 0
TEST 1
TRACK P SET
CTL DELAY
SW A
DRUM FF
TP FM
UNREG 9.6V
JIG
To MECHACON SECTION
CN11
DRUM FF
GND(SIGNAL)
SW B
SW A
SW D
SW C
V REC MUTE
V REC 8V
TP FM
PB 5V
REC FM
PB FM
GND(SIGNAL)
GND(SIGNAL)
PB COL
REC COL
LP/SP
NC
From/To PRE/REC AMP CN1
D110 MA141WK
Q102 2SK665
IC101 BU3767K
Q106 2SK665
Q113 2SK665
Q111 2SK665
IC102 M51799FP
Q132 DTC144EU
Q133~Q136 DTC144EU
Q130 2SC4081

4.16 MAIN CIRCUIT BOARDS


— Rear —
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
R342
AUDIO BIAS LEVEL
R309
AUDIO PB LEVEL
R103
TRACKING PRESET
R4
REG 8 V ADJ
DC – DC CONVERTER
MAIN PWB ASSY YB10002K-05
MAIN PWB YB10002-04
TP1
TP2
TP3
TP4
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
CN11
CN12
CN13
CN14
CN15
CN16
CN18
IC 103
IC 106
IC 107
IC 403
CF401
CP1
CP2

— Front —
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
MAIN PWB ASS'Y YB10002K-03
MAIN PWB YB10002-04
CN 11
CN 12
CN13
CN14
CN15
CN16
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
CP 5
CP 2
CP 4
IC102
IC101
IC104
IC106
IC 401
IC402
IC404
IC1
DC/DC CONVERTER
DD 1
CF401
TP108
TP107
TP103
TP111
TP105
TP109
TP102
TP101
TP104
TP106
TP301
TP303
TP302
TP4
TP1
TP2
TP3
TP5
TARAP 301
J1
J4
L302
L303
Q1
Q11
Q106
Q121
Q404
Q405
Q406
D401
X1
RT01
C313
C315
C332
R322
C163
C164
C105
C166
C168
C167
C307
C306
C312
C311
C302
C310
R317
R326
C112
C122
C129
C111
C130
C102
C101
C109
R236
R476
C301
C325
C330
C326
C5
C3
C16
C6
C7
C4
C2
C1
C9
C404
R20
R17
R413
R19
R162
R163
R166
R172
R138
R137
R129
R126
R127
R128
R401
R402
R404
R405
R422
R423
R420
R417
R418
R410